

PhD SCHOLARSHIP: Fatigue and gait decline in adult cerebral palsy: pathophysiological determinants and contribution of targeted physical activity

A fully funded 3-yr PhD scholarship is available at Jean Monnet University in Saint-Etienne (France) in collaboration with the University of Amsterdam (The Netherlands). The successful applicant will become part of a unique training and research environment, the ActiFS group within the multidisciplinary Inter-university Laboratory of Human Movement (LIBM). 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, electrical stimulation, transcranial magnetic stimulation), as well as energy cost and biomechanics of locomotion;
- Reporting the results in international peer-reviewed scientific journals and conferences.

Net remuneration around 1420€ monthly (healthcare included) from October 2021 to September 2024.

LABORATORIES

- Inter-university Laboratory of Human Movement Biology, Jean Monnet University, Saint Etienne, France
- Department of Rehabilitation Medicine, Amsterdam Movement Sciences, Amsterdam University, The Netherlands

SUPERVISOR

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CO-SUPERVISORS

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PROJECT SUMMARY

Cerebral Palsy (CP) affects 2 children / 1000 births, with spastic diplegic forms being 35% of CPs. Due to an early brain injury occurring in antenatal or postnatal, it causes alteration in motor function with posture and gait disorders. It is commonly observed motor performance degradation is during adulthood, and the underlying pathophysiology remains poorly known. One of the hypotheses to explain the decline in walking capacities in adults with CP is their greater fatigability, that could be related to energy overconsumption (due to the specific biomechanical constraints of their walking pattern) and/or the occurrence of early sarcopenia affecting the compensatory muscle mechanisms commonly seen in children to compensate for architectural disorders and posture alterations. To optimize prevention and/or therapy in these patients, it is crucial to better understand the aetiology of fatigability and its role in the decline in walking performance. The first objective of this project is thus to explore how fatigability and reduced walking performance are related. This will be possible thanks to an integrated approach (clinical, neuromuscular, biomechanical, energetic). The second objective is to investigate the effects of an adapted training program (i.e. aerobic training and resistance exercises targeting compensatory muscle groups) in order to compensate the deficits evidenced in the first part of the thesis program.

APPLICANT PROFILE

The candidate should have a strong background in neuromuscular function analysis. Knowledge of energy cost and biomechanics of locomotion is an asset. Since experiments will be performed in patients, experience in the health domain will be considered. French is not mandatory but the candidate must be willing to learn French during her/his PhD and she/he must be able to communicate in English.

Full application must be sent in pdf format (gathered in one file) to the PhD supervisor and Cc to the co-supervisors. Deadline is May 3rd, 2021. The application must include the application form (see attached document), a detailed CV, one academic reference letter and a motivation letter. Interviews will be conducted by videoconference on May 10th.

APPLICATION FORM, PhD Contract. Session 2021

**Please do not overcome the number of pages indicated for each section.
Additional documents (academic results, copies of academic degrees, letters of
recommendation) may be added**

This form needs to be addressed to the PhD supervisor, in PDF format

and forwarded by the PhD supervisor before the May, 12^h 2021 at 12H00 am To:

**cdesray@emse.fr
rousseau@univ-st-etienne.fr**

FAMILY NAME, First name:

Email:

Title of the PhD subject:

Laboratory:

Name of the PhD supervisor:

When did you contact the PhD supervisor for the first time?

Date of the meeting with the PhD supervisor:

How do you speak French : 1 2 3 4

From “1 = I do not speak French” to “4 = I speak fluently French”

CURRICULUM VITAE

(2 pages front maximum)

a) Civil status

Family Name:

First name:

Nationality:

Date and place of birth:

Age:

Postal address:

Phone:

b) Bachelor (Licence in France):

University:

Year of diploma

Speciality:

Supervisor:

Academic transcript (please give a copy)

c) Master

(first

year) :

University:

Year:

Name of the master:

Academic transcript (please give a copy)

Ranking / Number of students: (**the document has to be testified**)

d) Master

(second

year)

University:

Year:

Name of the master:

Academic transcript (please give a copy)

Ranking / Number of students: (**the document has to be testified**)

If the 2nd year of Master is in progress, please give information related to the completed semesters (generally September – February)

e) Final training period during the master

Supervisor:

Laboratory:

University:

Dates of beginning and end of the final training period:

Scientific title of the training period:

Publications, participation to scientific meetings:

Keywords defining your skills and knowledges in the context of your application.

- 1.
- 2.
- 3.
- 4.
- 5.

Recommendation letters