Marie Skłodowska-Curie DN Doctoral Candidate | Importance of the activity intensity distribution for health across the lifespan (fulltime/ 36h)

Inserm U1153, Université Paris Cité, EpiAgeing

Offer Description

We would like to recruit a doctoral candidate for a project on the "Importance of the activity intensity distribution for health across the lifespan" that aims to characterise how age shapes activity intensity distribution over the lifecourse and how it impacts the association between physical activity and health. The candidate will join the Learning network for Advanced Behavioural Data Analysis (LABDA) a stimulating, high-level European Doctoral program including 13 PhD students trained in several European countries!

The LABDA project
LABDA is an EU-funded MSCA Doctoral Network, that brings together leading researchers in advanced movement behaviour data analysis at the intersection of data science, method development, epidemiology, public health, and wearable technology to train a new generation of creative and innovative public health researchers via training-through-research. The main aim of LABDA is to establish novel methods for advanced 24/7 movement behaviour data analysis of sensor-based data, examine the added value of advanced behavioural data analysis and multi-modal data for predicting health risk and facilitate the use and interpretability of the advanced methods for application in science, policy and society. Via training-through-research projects, 13 doctoral fellows will establish novel methods for advanced 24/7 movement behaviour data analysis and assess the added value of linking multimodal data. Together, they will develop a joint taxonomy to enable interoperability and data harmonisation. Results will be combined in an open-source LABDA toolbox of advanced analysis methods, including a decision tree to guide researchers and other users to the optimal method for their (research) question. The open-source toolbox of advanced analysis methods will lead to optimised, tailored public health recommendations and improved personal wearable feedback concerning 24/7 movement behaviour. For more information, see the project's website: https://labda-project.eu/

What you will do

Project title: Importance of the activity intensity distribution for health across the lifespan

Supervisors: Dr Séverine Sabia (Inserm, France) and Dr Eivind Aadland (Western Norway University of Applied Sciences, Norway)

Duration: 36 months

Project description: Analyses of physical activity accelerometer data have concentrated on descriptors of time spent in a few, gross intensity categories, ignoring the continuum of energy expenditure. The project will overcome these limitations by investigating the full spectrum of activity intensity distribution.
This project aims to get insight of physical behaviour along the life course by examining the full spectrum of intensity instead of the most commonly used intensity levels (sedentary behaviour, light and moderate to vigorous physical activity). Using innovative statistical analyses and multiple data sources spanning ages from 3 to more than 80 years old, the project will examine how age shapes activity distribution and whether the association between the intensity distribution and health differs across age groups. This will provide knowledge for future targeted

The objectives of the present project are:
1. To describe the activity intensity distribution across the lifespan using multiple data sources
2. To explore and compare methods allowing for the use of the complete activity intensity distribution during waking hours: functional data analysis (FDA) and multivariate pattern analysis (MPA)
3. To identify activity intensities associated with health across the lifespan using the full intensity spectrum using both FDA & MPA and assess the interpretability of the findings.

Expected results are: 1. an in-depth description of movement behaviour over waking hours by use of methods to consider the full spectrum of intensity distribution, namely FDA and MPA. 2. a better understanding of how age shapes activity intensity distribution to inform future targeted interventions. 3. a better understanding of how activity distribution shapes health over the lifespan.

Your main tasks and responsibilities in this project are to:
- Conduct literature review on the research questions
- Harmonise data from different data sources
- Understand and implement Functional Data Analysis and Multivariate Pattern Analysis in the different datasets
- Conduct statistical analyses to answer the project aims
- Write research papers
- Present findings at (inter)national meetings/conferences
- Collaborate and exchange knowledge and skills with the other LABDA fellows

What we expect

We seek a highly motivated scientist who has methodological skills, is keen to work as part of a team and communicate with supervisors and other team members, and has interest in public health. The research project should result in the defence of PhD thesis.

To be eligible for this position, the applicant must satisfy the following requirements conform the Marie Curie admission requirements:
- Must not already hold a doctoral degree;
- Must comply with the mobility rule: not have resided or carried out their main activity (work, studies, etc.) in France for more than 12 months in the three years immediately prior to their recruitment.

In addition, you meet the following requirements and experience:
- Masters degree in biostatistics, epidemiology, sport science, public health or equivalent with good knowledge in statistics
- Experience in statistical analyses using R or equivalent
- Demonstrated research ability (Master internship, scientific publication, or previous work experience)
- Fluent in English

The following experience and skills would be highly valuable:
- Previous experience with accelerometer data
- Previous experience in research on physical activity

Your working environment

Host organisation
Inserm is the National Institute of Health and Medical Research. Its' one goal is to improve the health of all by advancing knowledge of life and disease, innovation in treatment, and public health research.
The EpiAgeing team where the PhD candidate will be primarily based is part of the **Inserm Centre of Research in Epidemiology and statistics** (https://cress-umr1153.fr/) based in Paris. The Centre encompasses more than 300 staff members including researchers, PhD students, and support staff who together aim to i**dentify and characterize health determinants in various populations** by undertaking **innovative methodological research** to contribute to the development of primary, secondary and tertiary prevention.
The **EpiAgeing team** (https://cress-umr1153.fr/index.php/epiageing/), comprises around 15 persons including researchers, clinicians, statisticians, post-doctoral researchers and Master and PhD students. The team works on

determinants of health in older adults. Within this context, one of the projects led by **Dr Séverine Sabia** (main supervisor of the PhD) focusses on physical behaviours (assessed objectively by accelerometers) as determinants of health among older adults.

Secondment

This PhD project will be co-supervised by **Dr Eivind Aadland** from the Department of Sport, Food and Natural Sciences, at Western Norway University of Applied Sciences who has expertise in methodology for accelerometer data and physical activity in early life (https://www.hvl.no/en/employee/?user=Eivind.Aadland).

The project will be conducted in collaboration with **Dr Bjorge Herman Hansen** from the University of Agder in Norway (https://www.uia.no/en/research/helse-og-idrettsvitenskap/pahls-physical-activity-and-health-across-the-lifespan) and **Dr Nicolas Berger** from Sciensano in Belgium (https://www.sciensano.be/en/people/nicolas-berger). The PhD candidate will visit each of the three partner institutes as part of his training (6 months at Western Norway University of Applied Sciences, 2 months at the University of Agder, and 2 months at Sciensano).

What we offer

This PhD position is funded by the Marie Skłodowska-Curie Actions (MSCA) of the European Union's "Horizon Europe 2022" research and innovation program under grant agreement No 101072993. You will be appointed as fulltime PhD for 3 years at Inserm.

The MSCA programme offers **competitive and attractive working conditions**. The successful candidates will receive a salary in accordance with the MSCA regulations for doctoral candidates. Gross salary will consist of a Living Allowance (from 3 957,60 € per month with taxes) and a monthly Mobility Allowance. An additional family monthly allowance is applicable depending on family situation (for additional information see EU MSCA website). Please be aware that these amounts are subject to taxes, the exact salary will be confirmed upon appointment. The research project should result in a PhD thesis.

Successful applicants are eligible for parental leave in compliance with France legislature/keeping with Inserm standard employment policy. In addition to excellent accessibility by public transport, we reimburse 50% of your travel costs (commuting costs, maximum 96,36 €). As part of your contract, you will have 32 days of holidays per year.

Next to your local PhD training, you will participate in an **attractive educational program** customized to the 13 doctoral candidates. The **Learning network for Advanced Behavioural Data Analysis** training program consists of 3 secondments in European countries (2 in Norway, 1 in Belgium), monthly online trainings, 4 in-person 3-day workshops, conferences to optimally develop your academic and transferable skills. The doctoral school (ED 393) will also provide opportunity to follow further training and development and annual PhD meeting in Saint-Malo (France) to enhance skills for presention and dissimination of your research findings.

This **training program prepares you for a prosperous career as expert in epidemiology of physical activity either as a researcher or data scientists in private or public sector**.

If you don't have the nationality of an EU/EEA country or Switzerland, you will need a residence permit to live and work in France. We will help you with the application for this.

Further information

Application Deadline: 1st April 2023 (23:59h)

For application, please send to Séverine Sabia (severine.sabia@inserm.fr) your CV (clearly indicating that you fill in the admission and experience requirements), a motivation letter, and the last available marks from your Master. For more information about the application procedure or position you can contact Séverine Sabia at severine.sabia@inserm.fr.

The starting date of this project will be 1st of October 2023.