



**LIBM - EA7424**  
**Université Savoie Mont-Blanc**  
Campus Scientifique  
73376 Le Bourget-du-Lac, France

## PhD scholarship **Force-Velocity-Endurance relationship: FOVE**

A 3-year fully funded PhD scholarship is available at the University Savoie Mont-Blanc in Chambéry (France) under the supervision of **Dr Baptiste Morel** (PhD, Neuromuscular fatigue and Biomechanics) and **Dr Pierre Samozino** (PhD, Sports Biomechanics and Performance).

Applicants should have a MSc and strong research background in exercise biomechanics and physiology. Knowledge and practical experience in biomechanics and physiology experiments as well as programming skills and mathematical aptitude is mandatory. The successful applicant will become part of a unique research environment within the multidisciplinary Inter-University Laboratory of Human Movement ([www.libm.fr/en](http://www.libm.fr/en)). As a PhD student you will be responsible for:

- Independently carrying out research and completing a PhD dissertation within three years;
- Collecting and analyzing biomechanical data including kinetics and kinematics measurements;
- Organizing participants protocols within an experimental design;
- Reporting the results in international peer-review scientific journals and conferences;
- Presenting at LIBM journal Clubs and internal scientific events.

There are no citizen restrictions. Speaking French is not mandatory, but the candidate must be willing to learn French. **Academic excellence (top 10% ranking, highest marks/honors) is a key classification criterion.** Applications should include a cover letter discussing your interest in the position and stating the date when you expect to be available, CV, and the name and contact information of two academic references. Also, your application must include a detailed record of academic marks and ranking during the Bachelor and Masters' Degree.

### **Application schedule**

- Email documents for pre-selection (cover letter, curriculum vitae, academic marks) to both [baptiste.morel-prieur@univ-smb.fr](mailto:baptiste.morel-prieur@univ-smb.fr) and [pierre.samozino@univ-smb.fr](mailto:pierre.samozino@univ-smb.fr) before **May 7, 2022**.
- Final doctoral School auditions: **June 14-15, 2022**
- If the funding is obtained, PhD starts on **October 1, 2022**.

### **Project Summary**

Muscle contractile capacities are essential for human movement and locomotion. They are central to sports performance, but also to the quality of life of people with deficiencies or alterations in muscle function. Due to their molecular structure, striated skeletal muscle cells produce a lower force when the shortening speed is higher, and vice versa (force-velocity relationship). Furthermore, the maximum intensity of a muscular effort (expressed as force, velocity or power) decreases with the duration of exercise, but converges towards a characteristic intensity called critical intensity. Although the force-velocity and intensity-time relationships respectively characterize a continuum of force-producing capacities as a function of velocity and time, the interaction between the two has only been studied through point comparisons. Thus, instead of studying these interacting relationships separately, we propose to consider a force-velocity-endurance relationship.

**The objective of the FOVE project is to unify, through an integrative model, the two main effects of speed and fatigue on muscle force production capacities in order to propose and validate a new mathematical model of Force-Velocity-Endurance.** This fundamental project will be a cornerstone, in close collaboration with other health and sports performance projects in progress at the LIBM