

2018 call for applications doctoral students

Thesis topic:	Dose-effect of physical activity: assessing autonomic nervous system and force-velocity profile to optimize cardiovascular rehabilitation in coronary patients
Research laboratory:	EA SNA EPIS 4607, UJM, St-Etienne <i>Frédéric ROCHE, PU-PH, PhD, HDR</i>
Associate research laboratory	EA LIBM 7424, UJM, St-Etienne <i>Thierry BUSSO, PU, HDR</i>
International collaboration:	Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio, Finland <i>Jari-Antero LAUKKANEN, MD, PhD</i>
Others associate research laboratories:	EA LIBM 7424, Université Savoie-Mont Blanc, Chambéry <i>Pierre SAMOZINO, MCU</i> Laboratoire Motricité Humaine, Education, Sport, Santé (LAMHESS), Nice <i>Jean-Benoît MORIN, PU, HDR</i>
PhD supervisor:	David HUPIN, MCU-PH, EA SNA EPIS 4607, UJM, St-Etienne

Thesis topic, abstract:

Many studies have shown the importance of the relationship between: **1-the autonomic nervous system, ANS** and athletes performances and **2-the force-velocity profile, FVP** and athletes performances. Scientific literature only relates to studies with athletes and top athletes. Cardiac rehabilitation is essential after acute coronary syndrome to restore or increase physical capacities, which reduces cardiovascular risk in coronary patients. It is essential to adapt the content of cardiac rehabilitation sessions to optimize aerobic and anaerobic performance and quality of life.

We hypothesize that:

1-ANS could be used in cardiac rehabilitation in coronary patients, to induce **a sympathetic-parasympathetic balance** adapted through personalized sessions and regular medical follow-up.

2-FVP could be used in cardiac rehabilitation in coronary patients, to induce **a force-velocity balance** adapted through personalized sessions and regular medical follow-up.

We aim to determine the optimal dose-response of physical activity in coronary patients via a mathematical modelling in physiology and biomechanics, in order to: 1) highlight the reactivation of parasympathetic arm of ANS and 2) make the straight line slope of FVP reach an optimal target.

Candidate profile:

Initial training/qualification

-Faculty of Sports Sciences (second year of master) sports and health speciality, performance optimization speciality or equivalent

-Experience of rehabilitation in hospital (master)

-Level 1 Prevention and civil security (PSC1) or equivalent

Expertise

-Assessment and analysis of force-velocity profile and autonomic nervous system

-Teamwork

-Fluent in English writing and analytical tools (*Activlife 6* pour GT3x) and statistics (*R*).

Know-how

-Rigor, methodical and well-organized

-Good human relations

-Dynamism and creativity: the topic is innovative

Please send **your curriculum vitae and your cover letter** to David HUPIN (Deadline: April 29, 2018)
d.hupin@univ-st-etienne.fr

The best candidates will be auditioned by Skype