

PhD studentship: Investigation of the effects of heat on impulsivity and development of mitigating strategies

School: Applied Sciences

Scholarship: 100% tuition fee waiver for 3 years (at UK/EU rate)

Duration of studentship: fixed-term, 3-years

Stipend: none

Purpose: This multidisciplinary project aims to investigate the effect of hyperthermia on impulsivity with the objective to develop appropriate strategies and counter-measures for protection of the health and performance of individuals exposed to hot environmental conditions.

Deadline for application: 20 March 2016

Applications are invited for a full-time three-year PhD studentship at London South Bank University London, to begin in September 2016.

Project details

Heat exposure induces several neural and cognitive adjustments. These adjustments include faster nerve conduction velocity and reaction times, albeit with decreased accuracy. It was recently shown that passive hyperthermia increases the rate of false alarm during a sustained attention task as well faster, but false responses during a complex planning task. Together these observations suggest increased impulsivity of responses.

Impulsivity (or impulsiveness) is usually considered a consequence of impaired executive functioning. There are thought to be three different classes of impulsivity: motor (acting without thinking), attentional (lack of focus) and non-planning (not consider the consequences of future outcome). All types may affect various fundamental aspects of life in different sporting and occupational settings. Indeed, inappropriate or impulsive motor responses, lack of attention or technical errors might at best compromise performance and at worst jeopardise health and safety.

This PhD project will conduct a comprehensive investigation of the effect of hyperthermia on impulsivity with the aim to develop appropriate strategies and counter-

measures for protection of the health and performance of individuals exposed to hot environmental conditions.

The first aim of this PhD will be to characterise the cerebral alterations induced by hyperthermia, along with their effect on emotional responses and the associated behavioural response (impulsivity/inhibition). This first study will use computer-based tests and electroencephalographic (EEG) measurement in a controlled laboratory environment (Study 1).

To verify the effect of alterations identified in the first study in a real sporting situation (Study 2), behavioural analyses will be used during a real target shooting practice in hot and control environments. This may include assessment of neuromuscular and balance control. Both naïve and elite shooters will be used.

Study 3 will aim to develop and test convenient counter-measures usable by the shooters.

The successful candidate will work under a supervisory team composed of internationally recognised experts in cognitive psychology and environmental stressors - Dr Nadia Gaoua, in human neurophysiology - Dr Katya Mileva, and in the control, mechanics and energetics of gait and balance - Dr. Mian Omar from LSBU. The team will work in close collaboration with Cambridgeshire Target Shooting Association (CTSA). You must apply via UKPASS, application guidance is accessible here: <http://www.lsbu.ac.uk/research/research-degrees/how-to-apply>.

London South Bank University

London South Bank University (LSBU) is a dynamic, inner-city University with a diverse multi-cultural population of 17,700 students (7% of whom are international students) and 2,000 academic and support staff. LSBU has over one hundred years of experience of providing high quality teaching and learning, underpinned by relevant research and delivered in an environment that is focussed on the needs of its students, the great capital city of London, the UK and global marketplaces. The main LSBU campus is located at the heart of London in historic Southwark, only minutes away from the professional, social and cultural facilities of the capital.

The University is divided into seven Schools: Applied Science (AS), Health and Social Care (HSC), Law and Social Sciences (LSS), Engineering (E), Business (B), Arts and Creative Industries (ACI), and the Built Environment and Architecture (BEA). Teaching and the main administration is conducted at the Southwark Campus for all courses, except the professional courses in nursing, midwifery, health and social care, which are offered at sites at Havering and Great Ormond Street. Each School is headed by their Dean.

School of Applied Sciences

The School of Applied Sciences at LSBU offers exciting opportunities for education, research and knowledge transfer activities. Our vision is to be an internationally recognised centre of academic excellence, making a positive impact in the real world.

The School has a thriving community of scholars and students, who are supported by the rich educational environment and committed to academic excellence. Our academics and researchers pass on their knowledge, but also their enthusiasm and experience. A large number of staff are recognised as Senior Fellows of the Higher Education Academy, and have won prestigious educational and research awards. Our research work has been recognised by the 2014 Research Excellent Framework (REF) as being world leading or internationally excellent. Our involvement in research and enterprise work also means that our students are taught and mentored by leading authorities. Our academics and researchers play leading roles in learned societies and professional bodies, edit leading academic journals and disseminate their research in scholarly conferences around the world. They also work extensively with partners in the industry and the local community, ensuring that our work is meeting the needs and challenges of the real world.

Our undergraduate and postgraduate courses nurture scientific creativity, intellectual rigour and employability skills. This allows our graduates to pursue careers in their area of competence and to become tomorrow's leaders who can truly make a difference in the world. The School has a Student voice and engagement committee, and students actively contribute to the academic development of our courses. Students are also encouraged and supported to seek internal and external bursaries and to apply for prizes and awards which recognise their competencies.

Our School is a great place to study or get involved, but also a fantastic experience, whether you are a potential student wanting a first-rated degree course, or a business looking for consultancy or collaborative research.

Sport and Exercise Science subject group

The Human and Exercise Science subject group was established in 1993 and since then it has continued to grow in terms of its academic, research and enterprise activities. The subject group offers taught programmes at undergraduate level and postgraduate level and continuously ensures that its work is up to date and relevant. The undergraduate degree structure is built on five core scientific disciplines of sport and exercise: physiology, biomechanics, psychology, motor behaviour, and nutrition. At both undergraduate and postgraduate levels there is a symbiotic relationship between research and teaching. Sports science students benefit from the excellent staff reputation for research and enterprise and from the state-of-the-art experimental facilities for laboratory work and research projects.

On the last National Student Survey (NSS 2014) we had a 94 % satisfaction rate among our students and scored higher than the sport science sector on all criteria. Our research activities received an excellent rating in the last Research Assessment

Exercise (REF 2014): first amongst the modern universities and 7th nationally for research quality and intensity in the field of sports-related studies. Also, 90% of our research had an impact which was world-leading and of internationally excellent quality in terms of originality, significance and rigour.

Our group offers a unique blend of expertise, excellent facilities and the ability to attract funding in a number of key research areas. We benefit from both well-established and developing partnerships with research groups across the UK and Europe as well as from strong links to the healthcare industry and the sporting community. A problem-solving approach to research allied with the strong engineering support and facilities provided by the University has led to the development of significant intellectual property and new technologies. Examples of successful products that have benefited from product development and testing include nutritional products (e.g., CherryActive®, Firefly Tonics), footwear technology (e.g., FitFlop™) and health and fitness-promoting equipment (e.g., Revitive®, Flexibar®, FitVibe®).

Studentship information

The School of Applied Sciences are funding a 3-year PhD research opportunity. The scholarship provides tuition fees at the UK/EU rate and research costs.

Person description

We are seeking an individual with a strong interest for multidisciplinary research in psychophysiology and sports sciences. Given the different techniques that will be used in this project previous experience in using one or more of EEG, cognitive, neuromuscular and/or biomechanical experimental methodologies is considered a strong advantage for the position.

Eligibility

The studentship will be awarded on the basis of relevance of candidate's background for three years of full-time study. Overseas candidates are welcome to apply, but non-EU students will be required to pay the gap between home and international tuition fees.

Person Specification

Essential:

- ✓ Undergraduate degree with at least 65% as a final grade in a relevant science subject, or in a field related to the subject of the project;
- ✓ First-hand experience in electrophysiological data recordings and computational analysis;
- ✓ Excellent written, verbal and presentation skills for both specialist and non-specialist audiences (proof of proficiency in English will be required);
- ✓ Excellent interpersonal skills including clear and concise verbal communication and an ability to negotiate compromises and resolve conflict amicably;

- ✓ Excellent working knowledge of Microsoft Windows;
- ✓ Eligibility to work in the UK.

Desirable:

- ✓ MSc/MRes (at Merit or Distinction level) in a relevant science subject, or in a field related to the subject of the project;
- ✓ Ability and experience in collaborating effectively in teams;
- ✓ Previous experience collecting and analysing EEG data;
- ✓ Previous experience collecting and analysing body motion and/or force platform data;
- ✓ Familiarity with advanced statistics.

Personal attributes:

- ✓ An ability to work independently and with initiative at a high level of self-motivation;
- ✓ Ability to prioritise tasks to achieve project goals and meet deadlines;
- ✓ Ability to problem-solve, innovate or adapt;
- ✓ Ability to apply strong interpersonal skills to the building and maintenance of effective working relationships and to written and verbal communication with partners from a variety of professional backgrounds;
- ✓ High level, across-the-board attentiveness to detail.

Contact:

For informal enquiries please contact Dr Nadia Gaoua (email: gaouan@lsbu.ac.uk; telephone: +44 (0)20 7815 7547).

How to apply:

Your application for a scholarship should be included as part of your UKPASS application for the research degree, applicants are asked to tick the box on the UKPASS online application form to indicate that they are applying for a scholarship. The application will need to include:

- details of your education (subject, level, institution, date of award), academic transcripts and professional qualifications and distinctions other than degrees;
- your current curriculum vitae;
- a personal statement setting out your motivation for applying for the post and explaining how your skills, experience and academic knowledge will contribute to the each of the criteria and to the project;
- names and contact information of two referees.

A shortlist of candidates will be invited to interview. Candidates are requested to respond promptly to such an invitation, indicating their agreement to attend and their availability. The successful candidate will be selected for the award in accordance with the University's postgraduate admissions requirements and must be eligible under the Education (Fees and Awards) Regulations 1997.

Closing date for applications: 20 March 2016