Project Title: The acute physiological effects of physical inactivity and sit-stand transitions.

Supervisors: Dr Jacqueline Mair (SESRI), Prof Marie Murphy (SESRI), Prof Alison Gallagher (BSRI)

Contact Details: j.mair@ulster.ac.uk

Level: PhD

Background to the Project:
Sedentary behaviour is a risk factor for multiple health outcomes and ‘too much sitting’ is now recognised as an important public health concern and a research priority. The UK physical activity guidelines recommend reducing sedentary behaviour across all age groups with the broad message being to ‘minimize the amount of time spent being sedentary (sitting) for extended periods’. However, recent evidence shows that adults and children still spend much of their waking-time engaged in sedentary behaviours. Considering that many of the benefits of physical activity derive from acute physiological changes, some of which may persist for hours and days following the ‘last bout’ of activity, it is likely that some health benefit exists as a result of transitioning from sitting to standing. However, the ‘last bout’ effects of interruptions to sitting are not yet well understood and more evidence is needed to provide relevant dose-response data (how long to sit for or how often to interrupt periods of sitting). This project will explore the acute physiological changes that occur as a result of prolonged sitting and transitions from sitting to standing, facilitated by sit-stand workstations. The study design and measured variables would be at the discretion of the project student with support from the project supervisor but are likely to include energy expenditure, ambulatory blood pressure and biomarkers of glucose and lipid metabolism.

Methods to be used:
The successful candidate will work in an area recently identified as a ‘research priority’, and will avail of collaborative support from Ulster University’s Sport and Exercise Science Research Institute and the Biomedical Science Research Institute. They will have access to sit-stand workstations to complete their work. The final design of the research programme will be dependent on the strengths and interests of the doctoral student.

A systematic review of the evidence linking sedentary behaviour to health outcomes will inform an evaluation of the last bout effects of variations in patterns of sedentary behaviour and sit-stand transitions, and an intervention aimed at improving health outcomes through decreasing sedentary behaviour using sit-stand workstations.

Objectives of the Research:
• To evaluate the ‘last bout’ effects of different patterns of sedentary behaviour and sit-stand transitions
• To obtain dose-response data relating to sitting time, standing time and number of transitions and health outcomes/biomarkers over the course of a day
• To evaluate the longer term physiological responses to a sedentary behaviour reducing intervention, facilitated by sit-stand workstations.

**Skills required of applicant:**
The successful applicant will be passionate about promoting healthy behaviour and will have experience in physical activity, sedentary behavior or exercise-based research, including human physiological measurement and analysis. They will have excellent interpersonal and organisational skills, an ability to work on their own initiative and good oral and written communication skills.

**References:**
Davies S, Burns H, Jewell T, McBride M. (2011) Start active, stay active: a report on physical activity from the four home countries. Chief Medical Officers; UK.


**Applicant Instructions:**
As part of the application process candidates will need to demonstrate an understanding of the project area and be able to detail how they would take the proposal forward. This will require them to write a proposal. The proposal will be a minimum of 2 and a maximum of 4 pages (excluding bibliography). Arial 11 font, 1.5 spacing. The proposal will detail: Aims and research questions; an overview of the background literature that outlines the rationale for the proposal; methodology; an overview of how the applicants academic and/or vocational experience equips them to undertake the proposed research; bibliography (1 page maximum).