

Department of Sport and Exercise Science

Pre-Approval PhD, MPhil and MRes topic areas

Dr Mitch Lomax (mitch.lomax@port.ac.uk)

Human Performance and Health

- Breathing muscle limitations in sport and/or exercise - Relevant topics might include the occurrence, mechanisms, and/or impact of such limitations.

Human Performance and Health

- Breathing muscle training and/or breathing muscle warm-ups in sport and/or exercise - Relevant topics might include the optimisation of breathing warm-ups/training programmes, periodisation, detraining, and/or mechanisms of action.

Human Performance and Health

- Breathing limitations and breathing training or exercise training/physical activity in clinical populations such as, but not restricted to, asthma and COPD.

Human Performance and Health

- Swimming performance physiology e.g. stroke kinematics, fatigue and methods to maximise performance.

Human Performance and Health

- Individuals with a particular interest in breathing muscle limitations in swimming and/or methods to overcome the negative impact of such limitations are particularly welcome.
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Dr Clare Eglin (clare.eglin@port.ac.uk)

Extreme Environmental Medicine and Science

- Responses to cold water immersion - This research area focuses on survival during cold water immersion. Relevant topics include factors affecting the initial cardio-respiratory responses to cold water immersion, swim failure and hypothermia (e.g. water temperature, exercise, clothing, area exposed, habituation and medicine/drugs).

Extreme Environmental Medicine and Science

- Peripheral vascular response to cold challenges - This research area relates to the cold sensitivity observed in individuals with non-freezing cold injury, Raynaud's phenomenon and those regularly exposed to the cold (e.g. windsurfers). Appropriate research topics include interventions to improve rewarming following a cold challenge in cold sensitive individuals and comparison of the control of skin blood flow in cold sensitive compared to normal individuals using iontophoresis of vasoactive agents.
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Dr Heather Lunt (heather.lunt@port.ac.uk)

Extreme Environmental Medicine and Science

- Cold water swimming training, thermoregulation over the course of a season - This study will investigate cold water swimmers over the course of the open water season to assess if further adaptations.

Extreme Environmental Medicine and Science

- The effect of exercise when exposed to hypoxia following habituation to hand and forearm cooling - Previous studies in this lab have found that whole body (head out) cold water immersions have an impact on the responses to hypoxia. This study establish if the same responses can be elicited with a smaller skin surface area repeatedly exposed to cold water.
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Dr Andy Scott (andrew.scott@port.ac.uk)

Human Performance and Health

- *The role of exercise testing in elective and non-elective surgical screening and the effect of exercise prescription in managing surgical risk.* Pre-surgical exercise testing is increasingly commonplace in UK hospitals to enhance post-surgical management, however there is sparse evidence of exercise interventions to enhance post-surgical prognosis. This project aims to investigate the optimisation of exercise to enhance post-operative outcomes. Such projects may involve patient groups or apparently healthy participants for pilot study purposes.

Human Performance and Health

- *The interaction of nutritional supplementation and exercise on health outcomes in individuals with chronic disease.* Areas of particular interest

include optimising protein/creatine supplementation in patients with sarcopenia secondary to another chronic disease, mechanisms of effect of dietary nitrate on exercise physiology in patients with heart disease, and combinations of exercise/functional foods on exercise capacity in patients with peripheral arterial disease.

Human Performance and Health

- *Physical activity for type II diabetes; aerobic vs resistance training in lean vs obese patients with diabetes.* This project aims to investigate optimal exercise training procedures for enhancing health gains through exercise for patients with type II diabetes with varying morphology.

Human Performance and Health

- *Evaluating exercise referral services.* Structured and supervised exercise has been demonstrated to improve numerous health outcomes. This project aims to investigate models of best practice and identify areas requiring optimisation in community exercise referral services, possibly with an emphasis on a specific referred medical condition.

Human Performance and Health

- *Exercise service provision for patients with cardiac, pulmonary and diabetes conditions.* This project aims to investigate the efficacy of exercise provision for patients with one of the services, such as increasing PA in patients with chronic heart failure, increasing PA in DESMOND attendees, enhancing exercise maintenance in COPD and facilitating graduation from phase III to phase 4 in patients with cardiovascular disease. This project could also investigate the feasibility of using established clinical exercise services for other non-commissioned clinical disorders/services.

Dr Chris Mills (chris.mills@port.ac.uk)

Breast Health

- *Breast motion asymmetry* - This project aims to investigate both static and dynamic breast asymmetry, then utilise the data to inform bra design.

Human Performance and Health

- *Multi segment neuromuscular changes during impact in response to anticipated and unanticipated post landing movement direction* - In order to control landings the central nervous system must provide effective strategies involving the adaption of both the neuromuscular and kinematic parameters

to adequately attenuate impact forces and to control joint loading. The current project will seek to analyse and understand how neuromuscular control of movement patterns during flight and landing are modulated depending upon anticipated and unanticipated post landing movement direction.

Human Performance and Health

- *Examination of spatio-temporal constraints on perceptual-motor control* - this research investigates how people alter their gait kinematics and gaze behaviour in response to changes in the environment, such as, fixed obstacles in their path or navigating through a crowded room. A combination of visual perception and motor control of human movement is essential to collision avoidance.

Dr Jenny Burbage (jenny.burbage@port.ac.uk)

Breast Health

- Breast support implications (biomechanical, physiological or psychological) for specific athlete populations (e.g. horse riders) - Relevant projects might include assessing the effects of breast support on technique within sport or investigating the effect of specific bra components on breast support and comfort.

Breast Health

- Bra fitting – Research in this area may include investigating the effect of poor bra fit on the function of breast support or developing criteria for appropriate sports bra fit.

Breast Health

- The development of educational material for breast health issues - Projects in this area will investigate the prevalence and severity of breast health issues in special populations and as a result will aim to design effective interventions.

Human Performance and Health

- Assistive devices – Research in this area will broadly assess the effect that assistive devices may have on injury or performance in sport. Examples of assistive devices include protective equipment, taping, bracing and orthotics.

Dr Matt Dicks (matt.dicks@port.ac.uk)

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Human Performance and Health

- The embodiment and acquisition of perceptual skill - grounded in the theory of affordances, and related research, projects in this area will seek to examine how changes in action capabilities impact upon perceptual skill accuracy.

Human Performance and Health

- The optimisation of training methods for improving perceptual skill and decision making – research in this area spans across a range of different domains including sport performance and health care settings (e.g., radiographers and paramedics). Projects in this area also present the opportunity to work with eye tracking technologies, where appropriate.

Human Performance and Health

- The role of situational context on perceptual skill – Much of the research on perceptual skill has tended to focus on discrete events in time (e.g., anticipation of a tennis serve action), rather than information pick-up across longer time-scales (e.g., game context). Projects in this area will seek to examine how information is exploited by sportspeople across different interacting time-scales.

Human Performance and Health

- Gaze control during everyday interpersonal interactions - The majority of person perception research in different domains has tended to examine behaviour by simulating one person through an image, avatar or video projection. In order to advance understanding, research in this area will seek to examine real-time situations to understand the mechanisms of gaze control that occur during daily interpersonal interactions.

Dr Chris Wagstaff (chris.wagstaff@port.ac.uk)

Human Performance and Health

- Organizational functioning - Projects within this area might relate to capacities, processes and outcomes associated with positive organizational psychology in sport.

Human Performance and Health

- Psychology of elite performance - Projects in this area might relate to leadership, coaching and group dynamics.

Human Performance and Health

- Stress and emotion - Projects in this area might relate to transactional stress, emotion regulation, or emotional intelligence.

Dr Neil Weston (neil.weston@port.ac.uk)

Human Performance and Health

- Performance profiling - Projects may include examining the efficacy of the profiling technique in various populations in addition to examining the impact of the strategy on various psychological variables (e.g., confidence, motivation, task involvement)

Extreme Environmental Medicine and Science

- Psychology of extreme environment activities - Research in this area would involve examining the impact of different environmental conditions (e.g., hot, cold, humid, dry, wet), and possibly isolated locations, upon the psychology of human performance

Human Performance and Health

- Psychological skills training for sports performance - Projects could examine the impact of psychological skills training on a performer's cognitions and associated sports performance

Human Performance and Health

- Psychology of sports coaching - Research in this area would examine the impact of a coach's mindset on their ability to perform effectively within a training and/or competitive context. This may include the impact of pressure/stress on coach cognitions and performance.

Dr Richard Thelwell (richard.thelwell@port.ac.uk)

Human Performance and Health

- Psychology of sports coaching – with recent work examining the role of the coach as a performer, projects within this area may wish to examine coaching

within the context of stress, coping and emotion, or from an interpersonal perception perspective where judgements and expectations are formed of athletes and coaches alike.

Human Performance and Health

- Transference of sport psychology principles into organisational and business domains – there is recent evidence of sport psychology principles being used in varying domains. Therefore, projects exploring the potential for transference (e.g., mental toughness, psychological skills training, resilience) are encouraged to examine the effectiveness of such transference.
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Zoe Saynor (zoe.saynor@port.ac.uk)

Human Performance and Health

- Key research interests: clinical exercise physiology, paediatric exercise physiology, mechanisms of exercise limitation in patients with chronic disease, healthy aging, low-cost interventions to improve physical and psychosocial health of patients with chronic disease, physical activity behaviours in children and adolescents.

Human Performance and Health

- Mechanism(s) of exercise limitation in patients with chronic disease

Human Performance and Health

- The influence of chronic disease on oxygen uptake kinetics and muscle metabolism;

Human Performance and Health

- Respiratory muscle training and singing in children and adults with cystic fibrosis;

Human Performance and Health

- Physical activity behaviours and interventions in paediatric or chronically diseased groups;

Extreme Environmental Medicine and Science

- The influence of exercise in the cold on respiratory function, airway remodelling and the development of respiratory conditions;

- The influence of overweight and obesity on respiratory function, particularly in paediatric groups.
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Dr Joseph Costello (joe.costello@port.ac.uk)

Extreme Environmental Medicine and Science

- Peripheral vascular responses evoked in normal and cold-sensitive individuals by iontophoresis of α_1 - and α_2 -adrenoceptor agonists

Extreme Environmental Medicine and Science

- The effect of acute beetroot juice supplementation on local skin temperature and blood flow following cold water immersion in normal and cold-sensitive individuals

Extreme Environmental Medicine and Science

- Diagnostic tests in Non-Freezing Cold Injury

Extreme Environmental Medicine and Science

- Ethnic differences in thermoregulation (e.g. cold water immersion, cold air exposure).
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Mr Tom Webb (thomas.webb@port.ac.uk)

Human Performance and Health

- Talent identification of elite referees, pathways, referee selection and development. Projects could examine the impact of the identification of talented referees, how are referees being selected, what are the training processes that these referees are being delivered in order for them to progress through the development pathways? Projects may consider the impact of the present structures and potential changes that would contribute to the evolution of this pathway.

Human Performance and Health

- Comparative analysis of refereeing pathways, structures, models, training and performance in varying European countries. A wealth of research now exists on the elite refereeing structures evident in England, Spain and Italy.

Projects may extend and further develop the existent literature with the collection of additional material and evidence in other European countries as a means of analysis.

Human Performance and Health

- Analysis and analytics related to refereeing performance. This area could be explored further through the generation of a bank of information over a number of seasons. This could involve building a pattern of refereeing performance over time in order to produce analysis, models and interpretation relating to a number of potential academic areas of interest.

Human Performance and Health

- Interdisciplinary projects related to the management of elite referees across national and international boundaries. This research would consider areas, although not exhaustive, such as the cultural implications of management, the management of geographically dispersed teams, the use of technology in training elite referees and impact on performance.