The Centre for Health, Activity and Rehabilitation Research (CHEAR) invites applications from individuals with a strong academic record for its 2019 research training bursary (i.e. A PhD plus Doctoral Certificate in Researcher Enhancement and Development).

Research conducted by members of CHEAR explores (i) lifestyle behaviours affecting the health status and quality of life of individuals and (ii) the design and delivery of health and rehabilitation services in community settings.

The research areas in the 2019 studentship round include:

1) **Can participation in RaceRunning favourably affect health and wellbeing?** [BUR19-17]
   (enquiries about this potential topic to Dr Marietta van der Linden; mvanderlinden@qmu.ac.uk)

2) **Community-based rehabilitation and exercise after critical illness** [BUR19-18]
   (enquiries about this potential topic to Dr Lisa Salisbury; lsalisbury@qmu.ac.uk)

3) **Frailty and risk of falling in patients with non-dialysis dependent chronic kidney disease** [BUR19-19]
   (enquiries about this potential topic to Dr Pelagia Koufaki; pkoufaki@qmu.ac.uk)

4) **Health-related quality of life, dietary adherence and nutritional adequacy in young people with Coeliac Disease** [BUR19-20]
   (enquiries about this potential topic to Dr Lois White; lwhite@qmu.ac.uk)

Applicants must have a first degree in a discipline / field of study relevant to one of CHEAR’s research sub-themes (Physical Activity and Exercise Rehabilitation; Musculoskeletal and Orthopaedic Rehabilitation; Clinical Nutrition and Biological Sciences) and will be expected to complete a PhD during the three year award period. The academic requirements are at least an upper second class Honours degree from a UK university, or an equivalent standard from an overseas university, and ideally a Masters degree in a relevant subject.

The studentship award includes tuition fees, an annual stipend of £15,000 and £2,000 research support allowance. Successful candidates will also be enrolled on the Researcher Enhancement and Development (READ) programme, which has been designed to formally recognise the learning that accompanies the successful completion of the QMU PhD programme. Successful completion of the READ programme will allow candidates to receive a 60 credit Doctoral Certificate (DCert) in addition to the Doctor of Philosophy (PhD) award.

The deadline for applications is **Monday 25 March 2019** with interviews taking place in mid-May. Details on how to apply can be found [here](#).
More information on CHEAR can be found [here](#). Information on how to apply to the Graduate School using funding from elsewhere can be found [here](#). Self-funded and externally registered candidates would have more flexibility in the topic of their research and should contact relevant potential supervisors to discuss such proposals.

Can participation in RaceRunning favourably affect health and wellbeing? [BUR19-17]

**Background**
Physical inactivity among people with cerebral palsy (CP) persists throughout the lifespan and is associated with risk factors for cardiometabolic disease in people with CP [1]. For people with CP with moderate-to-severe walking impairments, engaging in physical activities is challenging and evidence regarding the benefits of exercise or physical activity for this population is lacking [2]. “RaceRunning” [3] allows those who are unable to walk or move a wheelchair independently, to propel themselves using a “running bike”, with a breastplate for support, handlebars and saddle but no pedals. Currently, the majority of RaceRunning participants are young people with CP who use the bikes as part of physical education or therapy in special schools, weekly track training sessions or to participate in leisure activities e.g. family walks. Running bikes therefore allow these young people to take part in an aerobic activity and potentially improving their aerobic fitness and functional mobility. In a yet unpublished survey into the perceived impact of RaceRunning on health and wellbeing of 62 respondents from the UK and Sweden that their functional mobility had improved a lot (23%) or a bit (45%) since taking part in RaceRunning [4].

A 12 month study starting spring 2019 (joint funded by Action Medical Research and the Chartered Society for Physiotherapy) will examine the feasibility of conducting a large cohort study to investigate the effects of RaceRunning on cardiometabolic risk factors and functional mobility among young people with moderate-to-severe CP. The overall aim of this proposed PhD project is to complement this research (e.g. psychosocial outcomes. qualitative and reliability studies) and provide a longer term follow-up of the participants.

**Examples of the research questions the proposed studentship might explore:**

- What is the reliability of an incremental test protocol to assess the maximum aerobic capacity of RaceRunning athletes?
- What are the types of propulsion pattern used by RaceRunning athletes, and do they change with training?
- What are the attitudes and beliefs associated with taking part in RaceRunning and its impact on health and wellbeing? (qualitative methodology)
- What are the variability, effect sizes and patterns of change in psychosocial outcomes associated with taking part in RaceRunning?
- What are the feasibility outcomes associated with taking part in RaceRunning over period of 12 months?

**Supervisory team:** Dr Marietta van der Linden (expertise in CP, RaceRunning), Dr Pelagia Koufaki, (exercise/PA interventions aimed at reducing cardiovascular health risks in people with long term cardiometabolic conditions), Dr Kavi Jagadamma (Paediatric Physiotherapy, CP)

**References**
Community-based rehabilitation and exercise after critical illness [BUR19-18]

**Background:** Annually about 100,000 patients are admitted to Intensive Care Units in the United Kingdom with about 75% surviving to hospital discharge. There is now compelling evidence of ongoing physical, cognitive and psychological problems after critical illness that are frequently not addressed through current care provision [1, 2]. Physical problems may contribute to a prolonged recovery time and for many, exercising and participating in a structured exercise programme is challenging. There is a lack of a co-ordinated rehabilitation pathway and survivors’ needs are often neither identified nor specifically addressed [3]. There is still uncertainty about the most effective way to deliver physical rehabilitation after critical illness and in particular after discharge home [4, 5]. Discharge home is becoming increasingly ‘quicker’ and targeted at those who are ‘sicker’ shifting both the burden and complexity of care delivery to community services. As a result the development and evaluation of community-based rehabilitation is increasingly important. Qualitative evaluation of an exercise programme delivered immediately after discharge from hospital highlighted the importance placed on exercise by survivors of critical illness but identified barriers to the intervention, that had been designed by health professionals, including poor mental health, physical limitations and lack of motivation [6]. Our own work has highlighted that recovery following critical illness happens within an individual’s time frame, not a schedule imposed by the healthcare system, and rehabilitation and exercise interventions need to be responsive to this [3]. This study will employ a mixed methods approach [7-9] to firstly identify rehabilitation needs of survivors of critical illness after discharge from hospital and explore potential models for the delivery of exercise rehabilitation. Secondly, this data will be used to develop and pilot the feasibility of a community-based model of rehabilitation and exercise delivery after critical illness. It is anticipated engagement with survivors of critical illness will ensure the intervention is responsive to their needs and inform a community-based model of rehabilitation which promotes self and long-term management.

**Examples of the research questions that the proposed studentship might explore:**

- To explore the rehabilitation needs and potential models of community-based exercise rehabilitation with survivors of critical illness.
- To develop a community-based exercise rehabilitation intervention with survivors of critical illness.
- To pilot and explore the feasibility of a developed community-based exercise rehabilitation intervention for survivors of critical illness.

**Supervisory Team:** Lead Supervisor: Dr Lisa Salisbury. Second Supervisor: Prof Jackie Waterfield.
Clinical Advisors: The Edinburgh Critical Care Research Group (ECCRG is a multi-disciplinary research group led by Professor Tim Walsh).

**Selected References (complete reference list available on request)**
Frailty and risk of falling in patients with non-dialysis dependent chronic kidney disease (CKD) [BUR19-19]

**Background:** Frailty is a well-defined syndrome in people aged over 65 years and is characterised by altered physiological mechanisms that lead to vulnerability, loss of physiological reserve, and a range of poor patient relevant outcomes such as falls, physical disability, social and mental dysfunction and increased morbidity (1). Prominent risk factors associated with frailty in the elderly, include muscle weakness, gait and balance deficits, physical inactivity, polypharmacy, multiple co-existing chronic diseases, poor nutritional status (1). Frailty is now an emerging prevalent syndrome in Chronic Kidney Disease (CKD) (2) and is characterised by accelerated rate of diminishing cardiovascular function and aging processes that affect almost all body systems. Although some of the traditional frailty phenotype components such as muscle weakness, slow gait speed and nutritional deficits, are well described and highly prevalent in the dialysis population, emerging evidence suggests that these frailty risk factors become apparent even in the early stages of kidney function loss and also in younger patients (2). In addition, the impact of cardiovascular disease (CVD) in CKD is such, that patients with CKD are more likely to die due to CVD before reaching dialysis stage (CKD5). A recent systematic review in pre-dialysis CKD(3), discusses the strong presence and associations between traditional frailty components and clinical outcomes such as mortality and dialysis initiation. It also highlights the lack of evidence regarding relationships between frailty and other clinical and patient relevant outcomes such as falls. People with CKD, are commonly characterised as high risk multi-comorbid individuals and are therefore primary targets for effective interventions to optimise independent living and Quality of Life.

**Examples** of the research questions that the proposed studentship might explore:

- What is the prevalence of established frailty components and the incidence/circumstances and consequences of new falls in pre-dialysis CKD stages (CKD3b-5)?
- To what extent do conventional fall risk factors (e.g. physical function performance indicators, physical activity patterns, fatigue/exhaustion) and newly proposed risk factors (neuromuscular control of balance, number of daily body transfers and level of cardiovascular control during manipulations of body posture) mediate any relationships between CKD3b-5, frailty, and falls?
- What is the falls risk profile of people
**Supervisory team:** Dr Pelagia Koufaki, (Lead supervisor: exercise physiology and rehabilitation specialist with particular experience in both assessment of patient relevant outcomes and optimisation of cardiometabolic health), Dr Marietta van der Linden (Second supervisor: experienced PhD supervisor with expertise in gait and balance outcome assessment), Dr Jane Goddard (Clinical supervisor: Consultant nephrologist), Dr Sara Smith (Advisor: Dietician and expertise in nutritional assessment), Mrs Janet Thomas (Advisor: Physiotherapist and links to community based falls services)

**References**


**Coeliac Disease [BUR19-20]**

**Background:** Coeliac Disease (CD) is a life-long condition, affecting approximately 1 in 100 people globally (1). CD is largely underdiagnosed in practice due to the myriad of clinical manifestations; from severe malnourishment, to asymptomatic presentation (2). However, recent epidemiological research has identified a 6.5-fold increase in paediatric CD incidence in Scotland since 1990 due to improved awareness, screening practices and a true rise in cases (3). Although more cases are being diagnosed, adherence to a strict gluten-free diet (GFD) in young people, particularly adolescents, is low, increasing risk of future complications including fertility difficulties, osteoporosis and lymphoma (4). Furthermore, there is evidence to suggest health-related quality of life (HRQoL) and nutritional adequacy may be poor in adolescents with CD (5).

Two recent reviews highlight the burdens of following a GFD and the multitude of social, clinical, environmental and behavioural factors associated with poor dietary adherence and HRQoL in young people with CD (5-6). However, there is a paucity of experimental research investigating innovative and cost-effective interventions to improve multidimensional parameters of health & wellbeing in this population group (4). Furthermore, the evidence-base behind clinical management guidelines for young people with CD is lacking. As such, the proposed studentship will entail development of a UK-based intervention to improve GFD adherence, HRQoL, nutritional adequacy and additional PROMS in this at risk population. A mixed-methods approach, including an RCT and a qualitative exploration of participant experiences would be encouraged to assess the impact of the intervention in its most holistic sense.

**Examples of the research questions that the proposed studentship might explore:**

- Can a simple intervention using novel technologies improve GFD adherence, HRQoL and nutritional adequacy in young people with CD?
- What are young people’s experiences of a simple technological tool to improve GFD adherence, HRQoL and nutritional adequacy?
- Can a community-based intervention improve parameters of GFD adherence, nutritional adequacy and QoL in young people with CD?
How do young people perceive a family-based community intervention to aid GFD compliance and HRQoL?

Can multi-practitioner, group clinics for young people with CD improve indices of adherence, HRQoL and nutritional adequacy?

Supervisory team: Dr Peter Gillett (Clinical supervisor, Consultant Paediatric Gastroenterologist, Royal Hospital for Sick Children, Edinburgh), Dr Lois White & Professor Jackie Waterfield

References

5. White, L.E., Bannerman, E., Gillett, P.M. 2016. Coeliac disease and the gluten-free diet: A review of the burdens; factors associated with adherence and impact on health-related quality of life, with specific focus on adolescence. JHND, 29 (5).