BU STUDENTSHIPS 2021

PROJECT DESCRIPTION

PROJECT DETAILS
PROJECT TITLE
Biomechanical interventions in special populations to improve function and enhance exercise prescription outcomes
PROJECT SUMMARY
The project will be co- developed between the student and the supervisory team; however, interests should be aligned to BU's strategic investment area of Medical Sciences. Within special populations there exists unique movement control considerations and needs. This PhD will explore the needs of a chosen special population with the aim of developing specific, evidence based, exercise training programmes to enhance or maintain movement control. This problem will be approached by the integration of biomechanical and motor control methodologies and perspectives and will utilise state of the art motion capture technology and motor control assessment techniques.
ACADEMIC IMPACT
Through rapid development in data capture technology we can now quantify specific movement data quickly which allows clinicians with near real time feedback on an individual's progress to an intervention. This same technology also collects data which can often be considered 'redundant' in conventional terms, but with exploration of this data could allow for additional metrics, assessment methods, or interventions to be developed. This area of investigation, within special populations where unique motor control requirements are prevalent, as well as the development of technology, could allow for environmental changes to now be examined with assessment in- and out-side of the laboratory setting, which may be a key factor to their health living post-intervention. This project aims to expand this area of inquiry using the state-of-the-art motion capture technology available.
SOCIETAL IMPACT
Within special populations there exist unique movement control considerations which are often assessed in controlled, clinical conditions and therefore inherently lack the efficacy of real-world, in vivo, application. This is also often coupled with qualitative assessment methods which can be quantified to allow more accurate measurements to be taken leading to better design of intervention and re-assessment. This project aims to purposefully interact with key stakeholders within the special population society and, clinical assessors throughout the duration of the project. This will ensure direct impact through the creation of a meaningful real-world project which addresses the challenges to meet the societal needs affecting special populations and their clinical assessors.
DEVELOPMENT OPPORTUNITIES
The successful candidate will be expected to provide technical support for staff and students in the Sport and Exercise Science Human Performance Laboratory using specialist exercise biomechanical software and

experimental equipment. The time will be split 0.6 FTE researching for the doctorate and 0.4 FTE providing technical support.

SUPERVISORY TEAM	
First Supervisor	Dr. Andrew Callaway
Additional Supervisors	Dr. Jonathan Williams Prof. Carol Clark
Recent publications by supervisors relevant to this project	Anwary, A.R., Yu, H., Callaway, A. and Vassallo, M., 2021. Validity and Consistency of Concurrent Extraction of Gait Features Using Inertial Measurement Units and Motion Capture System. *IEEE Sensors Journal*, 21 (2), 1625-1634. Callaway, A., Peck, J., Ellis, S. and Williams, J., 2020. A randomised observational study of individualised variations in the start position of the closed-kinetic chain upper extremity stability test. *Physical Therapy in Sport*, 41, 16-22. Billy, S., Raymond, L. and Williams, J., 2021. Validity and reliability of innovative field measurements of tibial accelerations and spinal kinematics during cricket fast bowling. *Medical and Biological Engineering and Computing*. Williams, J.M. and Nyman, S.R., 2021. Age moderates differences in performance on the instrumented timed up and go test between people with dementia and their informal caregivers. *Journal of Geriatric Physical Therapy*. Gugelmin-Almeida, D., Clark, C., Rolfe, U. and Williams, J., 2021. Dominant versus non-dominant hand during simulated infant CPR using the two-finger technique: a randomised study. *Resusciation Plus*. Killingback, C., Thompson, M., Chipperfield, S., Clark, C. and Williams, J., 2021. Physiotherapists' views on their role in self-management approaches: A qualitative systematic review. *Physiotherapy Theory and Practice*.

INFORMAL ENQUIRIES
Please contact the lead supervisor on the following email for informal enquiries: acallaway@bournemouth.ac.uk
ELIGIBILITY CRITERIA
The BU PhD and MRes Studentships are open to UK, EU and International students.

Candidates for a PhD Studentship should demonstrate outstanding qualities and be motivated to complete a PhD in 4 years and must demonstrate:

- outstanding academic potential as measured normally by either a 1st class honours degree (or equivalent Grade Point Average (GPA) or a Master's degree with distinction or equivalent
- an IELTS (Academic) score of 6.5 minimum (with a minimum 6.0 in each component, or equivalent) for candidates for whom English is not their first language and this must be evidenced at point of application.

ADDITIONAL ELIGIBILITY CRITERIA

In addition to satisfying minimum entry criteria, BU will look closely at the qualities, skills and background of each candidate and what they can bring to their chosen research project in order to ensure successful completion.

HOW TO APPLY

Please complete the online application form by **15th August 2021**.

Further information on the application process can be found at: www.bournemouth.ac.uk/studentships