

# **BU MATCH FUNDED STUDENTSHIPS 2024**

## **PROJECT DESCRIPTION**

### PROJECT TITLE

Combining functional electrical stimulation and spinal stimulation to optimise walking in people with Multiple Sclerosis, a feasibility study

### PROJECT SUMMARY

Electrical stimulation, specifically functional electrical stimulation (FES) has been used in clinical practice for over 25 years to support rehabilitation for people with upper motor neuron conditions such as Multiple Sclerosis (MS), stroke and spinal cord injury (SCI). FES is effective through small electrical impulses to activate weak or paralysed muscles through exciting the nerves that connect to the muscles. It is most frequently administered through self-adhesive patches or electrodes which are placed on the surface of the skin directly above the muscle. The electrical stimulation can be used during functional activities such as walking, reaching or cycling to help enhance the muscle contraction or motor control.

Surface spinal stimulation works in the same way as FES, electrical impulses administered through sticky pads to electrodes. However, the target area of stimulation is the spine/spinal cord at the level of the nerve root of the weakened muscle.

Clinicians and researchers are continuing to understand the underlying mechanisms of how electrical stimulation works and its impact on neuroplasticity. Neurophysiological techniques such as functional magnetic resonance imaging (fMRI) and transcranial magnetic stimulation (TMS) have been used to establish neurophysiological changes because of using FES technologies, these techniques are not often used alongside behavioural measures and patient reported outcomes.

The aim of this interesting and novel project is to explore electrical stimulation in more depth to better understand how stimulation can contribute to improved function for people with MS.

The successful applicant will work with the research team to develop the project and research methodology providing an exciting opportunity to develop and shape the research in this area.

### ACADEMIC IMPACT

The academic impact of this research will be within the field of functional electrical stimulation and neuromodulation. This project will deepen our understanding of a novel stimulation technique combining spinal and the impact of the intervention on people with Multiple Sclerosis. In turn this new understanding may impact on how electrical stimulation is used in clinical practice as well as lead to the development of a definitive trial to explore if this novel stimulation technique changes outcomes for people with Multiple Sclerosis.

The expected outputs of this project are publications in peer reviewed academic journals, presentation at national or international conferences, and public knowledge exchange events.







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.

Candidates for an MRes Studentship should demonstrate outstanding qualities and be motivated to complete a MRes in 18 months and must demonstrate:

outstanding academic potential as measured normally by an upper second class honours degree (or equivalent Grade Point Average (GPA)

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.

#### HOW TO APPLY

Please complete the online application form by the deadline on the project webpage.

Further information on the application process can be found at: [www.bournemouth.ac.uk/studentships](http://www.bournemouth.ac.uk/studentships)