



Wearable Soft Robotics for Independent Living

Newsletter March 2021

WE ARE BACK!

We have secured further funding, and this time our project is called FREEHAB. The name reflects our intention of providing soft wearable devices for rehabilitation of mobility, that will eventually free patients to continue to improve their walking and standing at home. Freehab is an EPSRC funded collaboration between the University of Bristol and the University of the West of England. The project will utilise the technologies from the previous Right Trousers project and it aims to develop and evaluate soft robotic devices for use by clinical therapists and patients with mobility impairments from age-related causes or due to stroke. When designing devices, we will work closely with physiotherapists and with a Patient Research Partner who is a stroke survivor. The devices' functions will improve analysis of patient movement, treatment planning and mobility training, ultimately increasing patient independence.

We are thrilled to announce that, after overcoming several COVID-19 roadblocks, the Freehab team is now able to begin collecting data!

Delayed, delayed, delayed... GO! Study 1

Our first clinical study for FREEHAB is to observe how physiotherapists assess and treat their patients with impaired mobility. This will give the engineers essential information for designing the wearable rehabilitation devices. We had hoped to start data collection in March 2020, but of course that could not go ahead. But, with ethical approval for several adaptations to ensure the safety of all our participants, we can now begin with one of our community-based, private providers. **Physiotherapists will video record their assessment of patients whilst talking out aloud their clinical reasoning. We will also collect quantitative clinical measures and patient participants' biomechanics during the movements of walking, standing and sit to stand.** These patients will have age-related mobility impairments or will have had a stroke. The analysis will allow us to determine the essential components of movement assessment and the context of the therapists' reasoning and subsequent actions. **The analysis of all this data will determine what the rehabilitation 'trousers' will look like!**

2021 and beyond...

Freehab received funding for 3 years, beginning at the end of 2019, but because of all the delays, we hope for this funding to be extended. We will continue to develop soft wearable actuators, enhancing their engineering properties, for instance, optimising the specific power required for human movement. We will investigate different smart materials, smart structures, control, and energy. **Our goal is to significantly increase actuator capabilities, thereby minimising the size, weight and complexity of our wearable devices.** As the

technologies mature, they will translate from laboratory research to something that we can hope to be on the shelves one day.

Introducing...

Every newsletter we would like to introduce you to a different member of the team. Up today: Colin Domaille, a Clinical Partner at Domaille Neurophysio, our first data collection site. Colin has been incredibly accommodating of the study despite the challenges of the past year and we are lucky to have him!



"I have been working as a Neurophysiotherapist in Bristol for over 20 years, both in the hospital and community setting. During this time, I have worked with many people who have had a stroke. I have been fortunate to be involved in helping many of them in improving their abilities to restore movement and enable them to become more independent in everyday activities. I have been involved in some small research projects related to stroke and how we can assist individuals further and especially in the use of improved technology.

**DOMAILLE
NEUROPHYSIO**

I was very happy to be involved in this project as I believe this type of wearable technology will further help people in their rehabilitation journey." – Colin

Lots of exciting things to come over the next couple of years and we hope that you would like to continue to receive updates on these project developments. However, if you would like to be removed from the database, please let Leah Morris know.

The Right Trousers Team

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Find lots more info, including videos, articles and our friendly team of engineers, clinicians, and researchers on: <https://therighttrousers.com/>

