



Wearable Soft Robotics for Independent Living

Newsletter December 2021

Dear Father Christmas, I would like some trousers that can...

The aim of the Freehab programme is to realise wearable devices to help people with their mobility problems in rehabilitation and in daily life. Our first study involves video recording physiotherapy assessments of patients with impaired mobility due to aging or stroke. The physiotherapist talks aloud their clinical reasoning during this video and there is also a follow up interview to allow for further elaboration. We have now watched the assessment of three patients and interviewed their physiotherapists. The Freehab elves are busy analysing the data, particularly focusing on: a) how physiotherapists assess patient movement b) how they facilitate movement and c) how a future soft-robotic assistive device may be able to offer similar facilitation. If these patients were to write a list to Father Christmas for what they might like the device to do, it might look something like this...

The North Pole

Dear Father Christmas, I would like some trousers that can...

- *Encourage me to stop hyperextending at the knee when I'm stood up (but not stop it please, I'd like to work on it myself!)*
- *Help me clear my foot from the floor when I'm walking*
- *Counteract my low chair, it makes standing particularly challenging*
 - *be taken on and off easily too, please!*

But that's not all, please keep checking in as I will be adding to my list...!

Have a Merry Christmas!

Introducing...

Every newsletter we would like to introduce you to a different member of the team. Up today: Dr Ailie Turton, our Principal Investigator, from The University of the West of England, Bristol:

"I've been involved in the Right Trousers research programme since its inception in 2014. In our first project potential technologies for soft robotic trousers were developed. FREEHAB is our second project, and this time we are refining some of the technologies to produce wearable prototype devices to be useful for rehabilitation.

I trained and worked as an occupational therapist and specialised in stroke rehabilitation both in hospital and in community rehabilitation services. For much of my career I've been involved in research to improve the experience of people living with the effects of stroke. My research has enabled me to work with movement scientists, psychologists and now with robotics engineers, and I've enjoyed learning about all of their perspectives. We are fortunate to have physiotherapists and a patient partner working with us on the project. I see my main job in FREEHAB as being a constant voice to make sure their advice is kept in minds of the engineers. We are working towards devices that can be put on, worn comfortably, and that will be beneficial for enabling people who are having rehabilitation. We see wearable adaptive soft robotics as potentially valuable tools to help people to achieve their best chances for recovering their ability to walk, sit and stand up. Because of all the individual differences between patients, this is a tall order, and we must patiently strive towards finding solutions that will suit a range of abilities and wishes. It will be some years soft wearable acceptable and helpful devices are available for physiotherapists and their patients, but we are progressing well and part of the pleasure in this teamwork is seeing us getting closer to our goal."



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