

INTERNSHIP/FINAL THESIS – Project Wearable Breathing Trainer

Chronic respiratory disorders such as asthma and dysfunctional breathing (DB) are common in childhood. Children with respiratory disorders are frequently referred to a physical therapist, who educates children in self-assessment and works on improvement of breathing technique. In this context, children are asked to perform further breathing retraining exercises at home. However, these exercises are often not engaging, and children are not likely to be self-motivated to do these exercises, whereas engagement and motivation to sustain an active involvement is key to a successful outcome of therapy.

Here, smart clothing could offer a solution. A wearable breathing trainer has the potential to increase the training frequency at home and therefore decrease contact moments with the physiotherapist. By providing feedback and motivation, the breathing trainer could help the child to gain the skills to cope with asthma or solve the problem of dysfunctional breathing. A crucial aspect in product development is the translation of touch by the physiotherapist during current training sessions on location, into haptic patterns that indicate how to breathe in the right way, in the training shirt for use at home.

TASK DESCRIPTION

You will work as part of the Saxion research group SFT on location in Enschede and at locations of project partners (UT, MST, Elitac among others). In your research project you will develop the haptic scenario's that will be integrated in the wearable breathing trainer. The goal of these scenario's is to support the child in various stages of the breathing therapy, by giving a stimulating, coaching experience by use of small vibration motors. You will be collecting requirements in currently available literature on haptics and use input from paediatric physical therapists on breathing therapy. Mainly you will develop and try out different scenarios in iterations to come to a series of scenarios that may be used in different phases of breathing therapy.

You will get the opportunity to collaborate with haptics experts, doctors and physical therapists, designers, textile engineers, who are all open for collaboration and support of your research.

PRACTICAL INFORMATION

- **Student profile:** You study interaction design, interaction technology or similar, and are interested in haptics, smart textiles and medical product development; Either as an internship or graduation research. You preferably have experience in working with technology, tinkering, programming, haptics and working in a multidisciplinary environment.
- We are looking for a student who can take responsibility for certain sub-goals in the project, that can connect different fields of expertise, who is hands-on in his/her approach. You will mainly work independently in the lab, but you're pro-active in including relevant partners in your research. As a group we work together to achieve the best results in our projects.
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