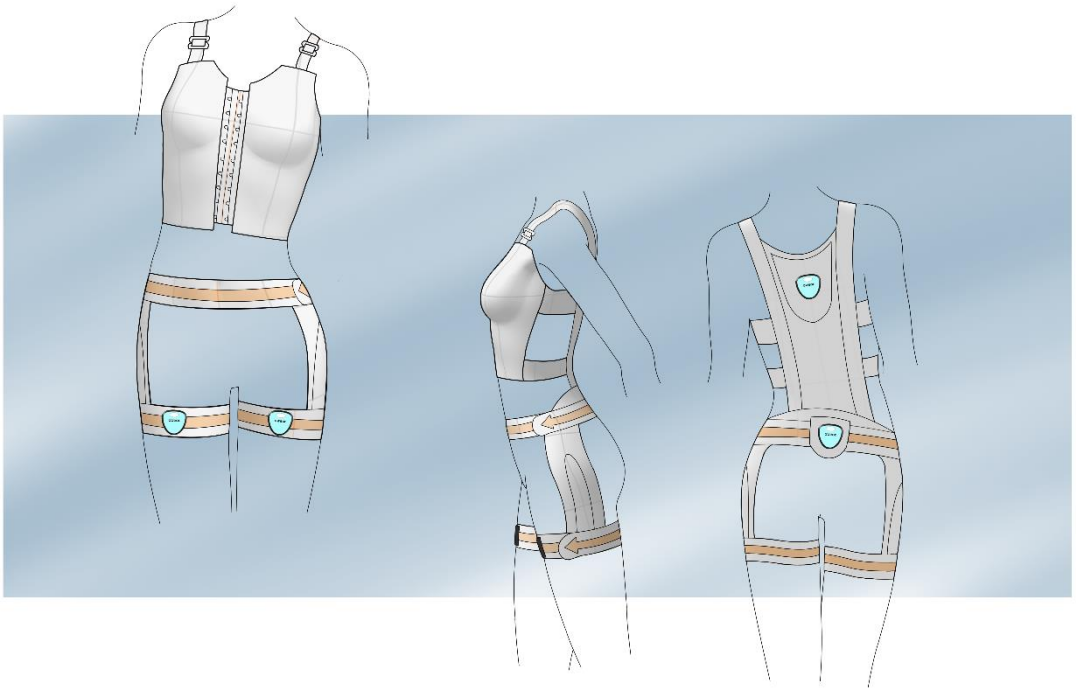
Redesign of a posture aid device for improved comfort and user-friendliness

Public summary



This graduation assignment focuses on re-designing a posture aid device for people who just recovered from an injury to help them maintain a better posture. The idea is not to restrict users' mobility but to give them feedback on their posture when the body posture is bad or dangerous and need to be adjusted. This measurement is possible thanks to sensors incorporated in the design. Users would wear it daily under their regular outfits.

Previous prototypes were tested in order to find the exact problem: comfort, but also usability. After that, a literature review was done to gather as much information as possible from experts that could provide some hints on how to start. Literature showed that comfort is not as easier to define as discomfort. Furthermore: not only design can influence discomfort, but in great measure: material. Therefore, design and material requirements were defined. Although material could not be tested, it resulted on recommendations for further research: The material in contact to the skin recommended to be tested in future developments of the device is Nylon. Nylon has the faster decrease in humidity and the faster return to pre-heating temperature, aspects that highly influence discomfort.

In terms of design the focus was: to follow literature insights of usual problematic body positions that could create discomfort, and to help the user to understand the shape and correct way to use the prototype. Design requirements were used to came up with a design proposal that was possible to turn into a physical prototype with the help of a tailor, and to be tested. Results from testing were less optimistic as expected, as only half of the problems could have been solved: Comfort was achieved as participants tried out some extreme positions where they felt satisfied with the design, but only the upper half of it was easy to understand and wear, the lower part still presented usability problems. However, this insightful information was turn into design guides and recommendations for later work on the topic. Overall, further development still needs to be done to make this prototype a final product.

In overall, the main research question ***"How can a change in the design of a physio-therapeutic aid device positively change patients' experience and willingness to use it while preserving its effectiveness?",*** showed that users need to be understood better, especially when the body could differ that much between groups (e.g., gender, size, and age), because discomfort points change and therefore, the user's experience changes.
Also, willingness to use was related to effort put into using the device properly. An attempt to take out the responsibility of users minding their posture was made. The graduation assignment tried to provide users with a device that allows them to maintain their routine comfortably, so they are willing to use it and be taken care of.

A change in the design of a physio-therapeutic aid device can positively change patients' experience and willingness to use it by gaining the trust of the user when getting to know them more and their specific needs per groups, and by designing to avoid mistakes instead of making the user fully responsible for it. Nonetheless, that trust could (and should not) become a blind relation where users do not question themselves if the technology is doing right or wrong, especially in cases where human/technology mistakes occur due to usability or technical malfunctions.