



Design of a scalable tremor suppression brace for Essential Tremor patients.



This project presents a design proposal for a product that will suppress the tremor of patients diagnosed with Essential Tremor (ET). People suffering from ET are restricted in their ability to function in everyday life, due to a constraint of performing delicate movements. Simple tasks, such as drinking and eating are a great challenge for individuals diagnosed with ET.

STIL B.V. works on the development of an alternative solution to dampen a forearm tremor. STIL B.V. is developing a product that dampens the tremor by actively counteracting the movement of its users. With this, the product offers tremor patients a solution that does not involve surgery or use of medication.

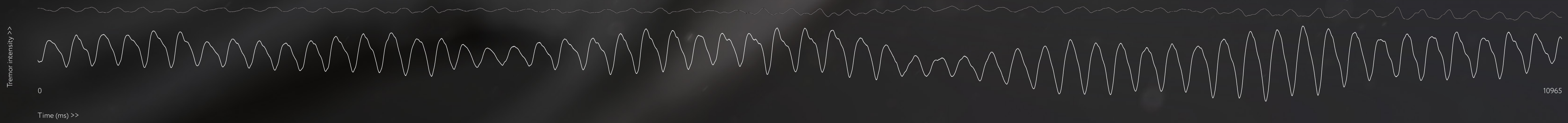
The to be developed product exists of two parts, a brace and an active dampening element (Exshell). The brace contains a force sensor that is able to measure forearm tremors. The Exshell contains an active dampening element to stabilize the arm. At the start of this project

the development of the brace, the part that has contact with the skin, was not yet started. A simple elastic band combined with a coarse vibration measurement principle was used for the prototypes.

The final result of this project is a fully functional brace design that is easy to use by tremor patients and is able to measure a forearm tremor. An efficient attachment method to the users arm and a redesigned forearm tremor measurement solution have been designed, made and tested. Additionally a set of different brace sizes has been developed to create a comfortable design for an as large as possible target group.

To stimulate the use of the product, a brace has been designed that is as comfortable as possible. This has been done by making an optimized ergonomic design for ET patients. The brace can be worn all day by the user and when needed the Exshell can be slid over the wrist and actively counteract forearm tremors.

This plot is an example of a measured tremor during a patient validation test. The forearm tremor has been measured in two directions. Each line represents a force generated in the arm over time in one of the specified direction.



Stijn Jagers op Akkerhuis
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Essential Tremor Patients
Integrated Product Design, Medesign specializa-
tion

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