

Exploring solutions for finger tremor patients

Designing finger tremor suppression through a passive wearable

This report presents an explorative study in finding solutions for finger tremor patients diagnosed with Essential Tremor (ET). Tremors restrict people from performing delicate movements, which creates difficulty in daily activities, such as drinking, writing, cooking or eating. Besides the challenges in performing tasks, social anxiety, which often occurs in people with a tremor, negatively influence people's social life.

Solutions for people with tremors are limited. To address this need, STIL B.V. has designed the BEAM orthosis, a wearable device that effectively suppresses wrist tremors. However, tremors situated mainly in the fingers need additional stabilization. This study aims to design a functional wearable that mechanically suppresses finger tremors.

The analysis showed the research gap in finger tremor suppression wearables. Due to the limited knowledge about the needs

and desires of finger tremor patients. This research aims to discover in which fingers the user needs suppression. The design scope concluded that the thumb, index, and middle finger at the second and third knuckle from the top of the finger needs suppression.

In the ideation phase, different passive suppression principles are researched with prototypes. The most interesting working principles were elastic bands and silicone splints with spring steel. User tests concluded that the concept with silicone splints was perceived as the most comfortable and had the best performance.

The final iteration focuses on appearance, ergonomics, usability, and connection to the BEAM. The concept for suppressing the finger tremor is promising but needs more iterations. This report is a basis for STIL to develop a finger wearable further.



Splints

The splints in the fabric exist out of silicone and spring steel. The silicone provides comfort, and the spring steel gives suppression.



Ergonomics

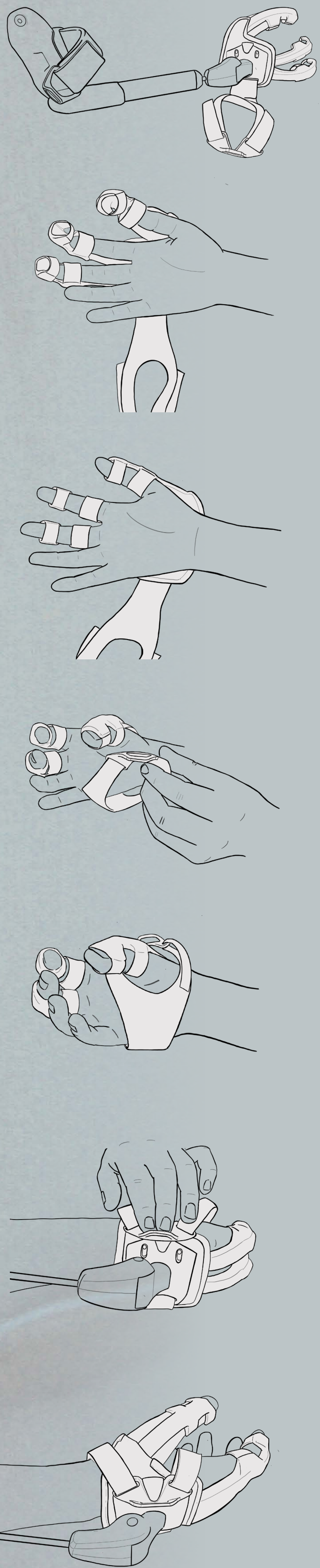
The splint design is based on average hand dimensions. The ergonomic design gives freedom in movements.



Appearance

The prototype (1) has an open design and the same look and feel as the fabric (2) from the BEAM.

scenario



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