Objective

The aim of this master thesis was to identify the most important design parameters for a trapeze harness for high performance sailing and gain insight on their influence on the design of trapeze harness.

Result

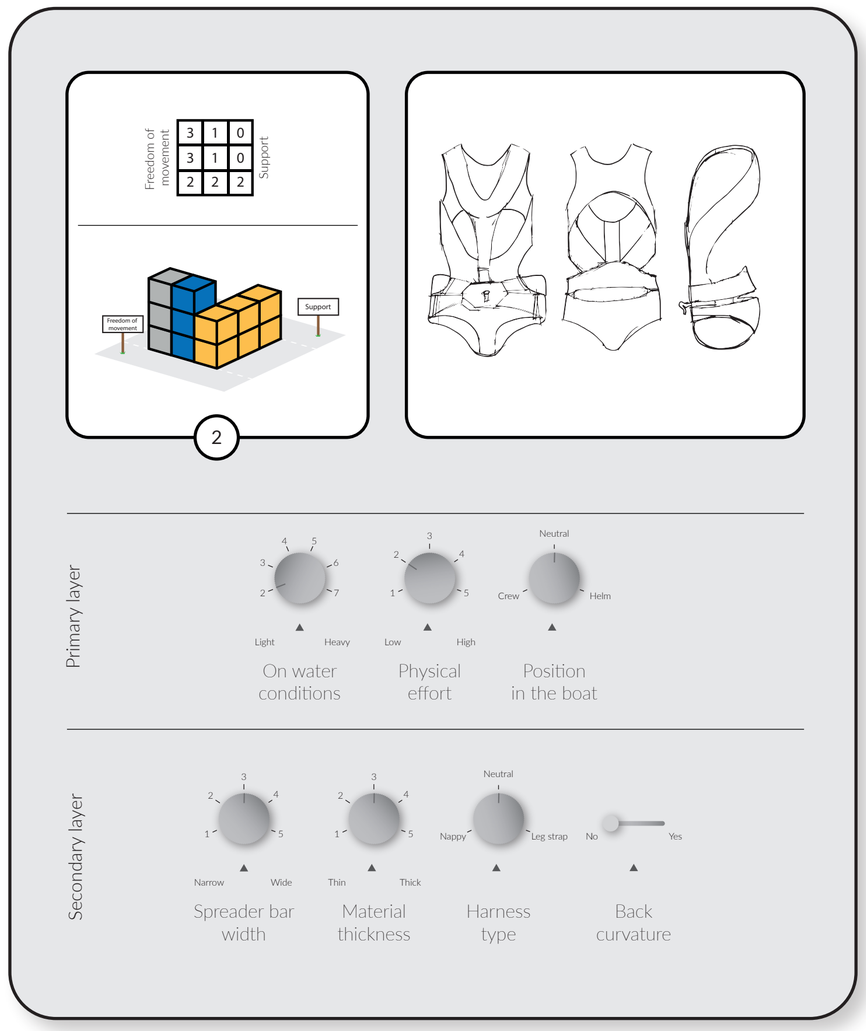
The relevant design parameters for a trapeze harness were obtained through multiple user studies, where the interaction between sailor and trapeze harness was analysed, consisting of interviews, observations and measurements. Resulting in a overview of insights and requirements. For a sailor the main criterion is the degree of freedom of movement and support of a trapeze harness. These qualities were found to be opposing, requiring the sailor to trade off.

Programming board ▶

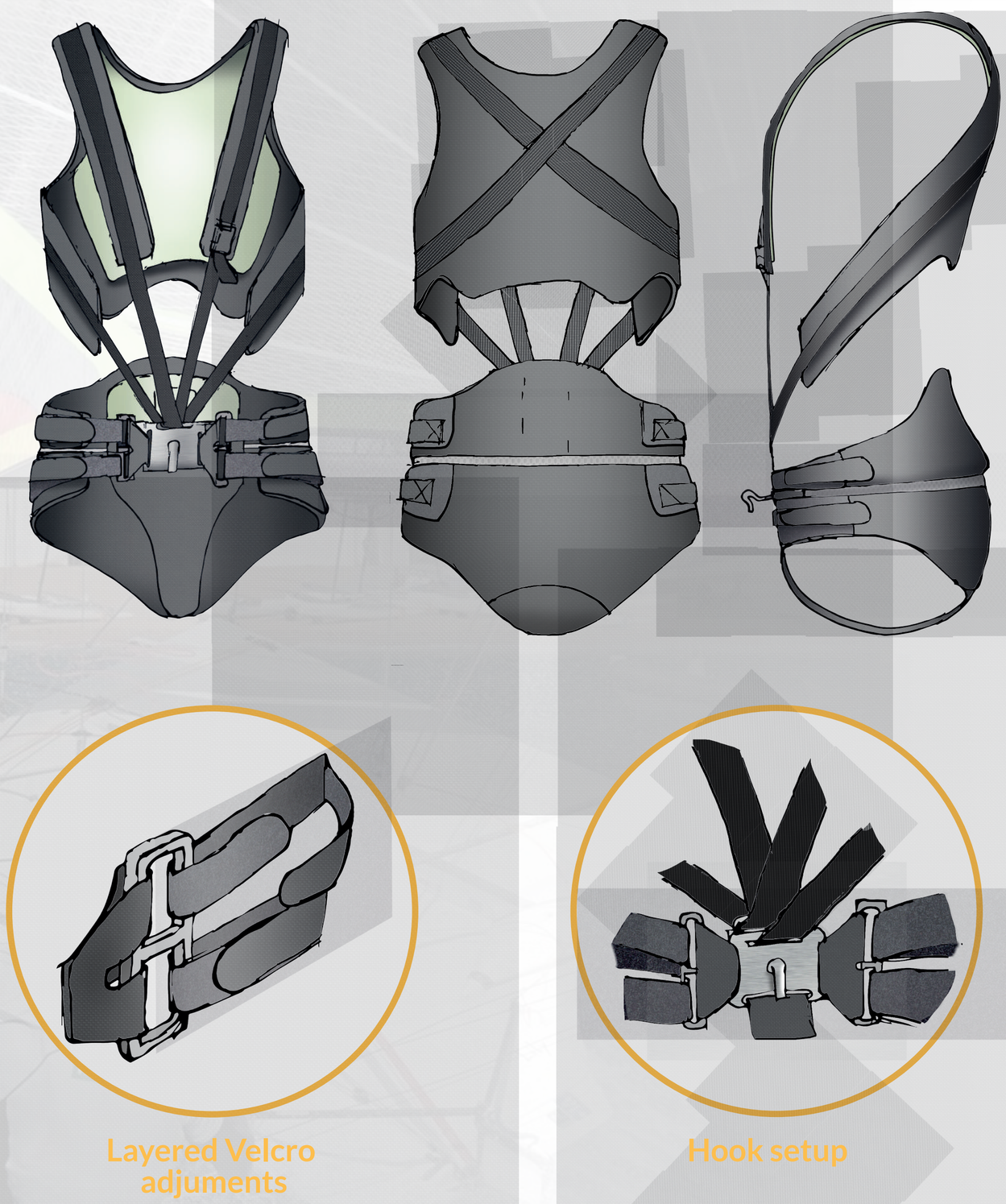
To demonstrate the effect of setting and design related parameters on the trade off, a tool was developed (the programming board). Based on the input, the programming board provides a visualisation of a harness design adhering to a set of design requirements that suits the degree of freedom of movement or support.

Proposed redesign ▼

One of the programming board's designs was chosen to be elaborated upon and assess its design. Resulting in a redesign that is charaterised by its shoulder strap setup that allows the back part of the harness to be divided into two parts, improving the freedom of movement of the harness.



An exploration towards a new trapeze harness design



Layered Velcro adjuments

Hook setup

Essential design parameters for a Olympic trapeze harness

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