

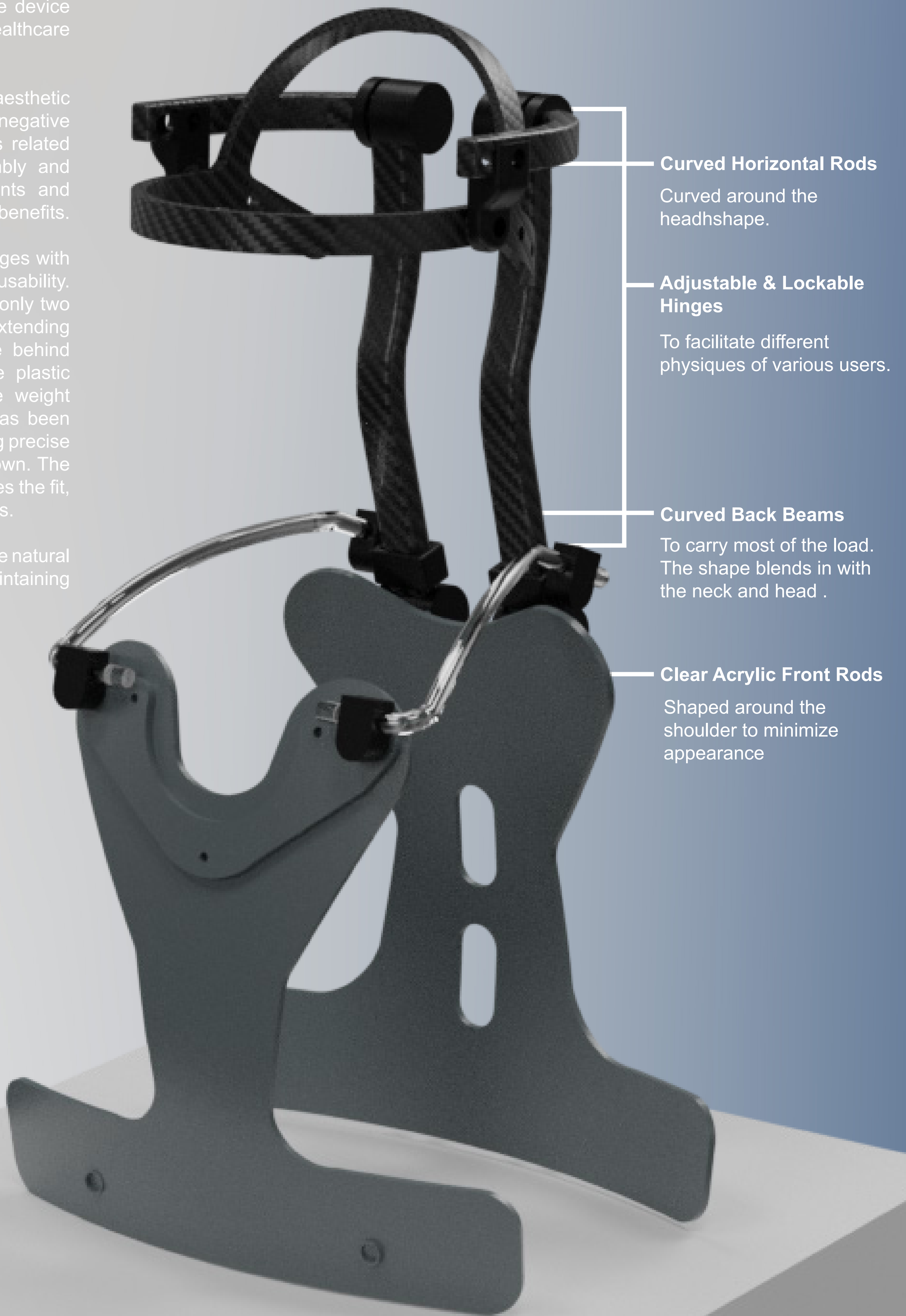
# A REDESIGN OF THE HALO FRAME

The Halo frame is a medical device used to provide cervical immobilisation for patients with severe spinal injuries. It ensures proper alignment of the spine during healing by stabilising the head and neck through a combination of a halo ring attached to the skull and a vest worn on the torso. While the device is effective, its acceptance among patients and healthcare professionals has been limited.

This lack of acceptance is largely due to the unaesthetic appearance of the frame, which can have a negative psychological impact on patients, along with issues related to comfort, bulkiness, and the difficulty of assembly and adjustment. These factors often discourage patients and doctors from opting for the device, despite its clinical benefits.

The redesigned Halo frame addresses these challenges with a focus on improving aesthetic appeal, comfort, and usability. The new design minimises visual intrusion by using only two vertical rods and an additional set of horizontal rods extending over the shoulders, moving much of the structure behind the head. Carbon fibre rods and a medical-grade plastic vest were incorporated to significantly reduce the weight while maintaining structural strength. Adjustability has been enhanced with a rack-and-pinion mechanism, allowing precise height adjustments even when the patient is lying down. The design also reduces the bulk of the frame and improves the fit, ensuring it accommodates a wide range of body types.

Controlled micromovements in the new design promote natural bone stimulation, preventing weakening while maintaining stability for safe healing.



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