

# Lifting and Walking Assistance for a Person with Mobility Impairment.

**There exist many different designs of lifting aids and walking aids, but barely any solutions that can do both. In this thesis project, a solution for a woman who couldn't stand up and walk on her own was created.**

This woman had a special need, for which there were not any solution on the market. During this thesis, a complete product was developed and designed to fit her needs. The result was successful since it improved her quality of life; she is now able to stand up and walk on her own. It also reduced the workload for assistants and family, who no longer needs to lift her up with their own strength.

The product lifts the user from sitting to standing position and then the product works as a walking aid by supporting the user by the armpits. All that is needed from the assistant is to push a button! It is safe to use, it is designed to be stable and easy maneuverable, and it even includes a personalized phone case.

This solution was created for a specific woman, but the area of use is broader than that. It can be used for persons with similar mobility impairments or for older persons who have difficulty with walking or standing up. It could also be used for persons who has been through an accident and people learning to walk again or building up their muscles. The design is adjustable and flexible with the purpose to help different kinds of people. For example, the armrest is removable so that it can be changed depending on the different persons needs.

During this thesis project the difficulty was, first of all, to understand the user's needs. This was very complicated before meeting the woman and her family, but after a home visit, the circumstances became much clearer. The next difficulty was to imagine and develop a concept that would work for the user, her home and her family but at the same time be possible to create practically. There were many different aspects to consider, such as; is it mechanically possible to build? What are the criteria for the lifting system? Does is exist a suitable motor for the purpose? Together with that, the solution had to be possible to design, manufacture and test within the 5 months, and it had to be possible to do within the set budget.

The most important aspect though, was to create a product that the user and family liked and agreed with. This meant that they were updated and stayed in close contact all throughout the project, and their ideas and suggestions were carefully considered. This is important since if the target user and her family didn't like the final product, this whole thesis would have been done unnecessarily.

Luckily, this wasn't the case, and this project was meaningful for the user and her family, for future persons needing help standing and walking, and for me. I gained deep knowledge about every step in the product development process and furthermore, I got to create something that will help persons in their everyday life.

By Margit Arctadius, 2020.

*Subject: Technical Design (MMKM10)*

*Division: Division of Product Development, Department of Design Sciences, Faculty of Engineering LTH, Lund University*

*Supervisor: Damien Motte*

*Examiner: Per Kristav*