Canadian Crutch

The union of numerous experiences with design has generated a new level of simplicity, well being and efficiency in affordable assistive products.



THE BRIEFING

The briefing was to develop a crutch based on people's real needs.

But how could we find solutions?

We heard people to find out what they expect from the crutch. How it might better serve their daily needs.

Conversation circles were held to get to know the the users context (sensations / experiences / needs / difficulties).





PERCEPTIONS

- Plastic excess hurt their arm and hands
- The handle shape hurts hands
- People get worried of getting around on slippery floors - Some tips wear out quickly
- Crutches are always falling
- It's hard to climb stairs with two crutches
- Walking with bags and purses is limited and difficult - Reflective part has its functions reduced, as it is located
- only on the front
- Top edge hits the arm when the user leans on it to open a door or grab something, for example.

CREATING PROCESS

How to create different solutions in a product? We started thinking about problems individually and solving them one by one.

Then we assemble them in one piece ...



Internal smothless surface



Armrest

Extension of the internal walls to the upper edge, providing greater support area for the arm.

Strength shape

Creates the sensation of resistance and security



The docking leaves one hand free, providing some activities, such as climbing stairs and opening a door.





The first concept





Autosselecionada (VAS)







ESCALA DE BORG NO TC6



Maiores valores para Cardio 96°

Menores valores para MMSS, MMII e Cardio 99°

103° Maiores valores para MMSS e MMII

INDICE DE REABILITAÇÃO



TESTS

Previous laboratory tests were performed with the current crutch at 3 different cable angles, in order to find out which one has less energy loss by the user.

RESULTS

The result obtained was that the angle of 99 ^o is the most appropriate for the development of the piece.



90

THE PROTOTYPE

As soon as we modeled in CAD the first version, a prototype was made with enough mechanical resistance to be tested by its users. Before that, the product was evaluated and tested by internal teams, including professionals in the field, such as physical therapists. The purpose of testing internally was to adjust some details in advance to bring a better product to

the tests with the final users.







The handle's ergonomics have been adjusted for right- and left-handers. The first model developed was prototyped and the hand pressure analysis was performed in the laboratory. The pressure compared to the existing model was relieved.

HANDLE

USER TESTS

Once the prototype was adjusted and brought to a new round of conversations with users, in order to confront the needs and difficulties with the solutions found.







RESULTS

challenges ahead.

The prototype received a lot of positive reviews which made the team even more motivated, but there were still

THE INVISIBLE PROBLEM

During the various conversations we had, we realized that one of the most critical issues for those using a crutch is the fall. Rainy days, slippery floors, create panic in these people.

We talked to users about what happens in these situations. And part of the problem could be caused by a discret piece of the crutch, which has a vital role in this issue, the tip.



The current tip offers the role of a suction cup when it is close to 90 degrees and has not been worn. Soon it loses its functions and offers risk to the user.

with ease mold extraction. with good grip and wear resistance was developed. feel really safe.

Several shapes were tested in order to combine the best grip Taking advantage of the rubber factory's expertise, a compound The design, moreover, needed to provide strength for users to

Inspiration in the tyre cavities to avoid slipping on wet floors





NEW TIP







PARTING LINES

The parting lines affect the user's comfort, as any plastic excess can cause injuries to the user. For this reason, we gave a big attention to the plastic injection process, several simulations were made to achieve the best finishing in these critical areas.







Possibilidades de defeitos de superfíce



INJECTION MOLD

The design of the mold has remained the same. Which is a good aspect to remain in the same price range as the current product.