

HAND-FREE WALKER

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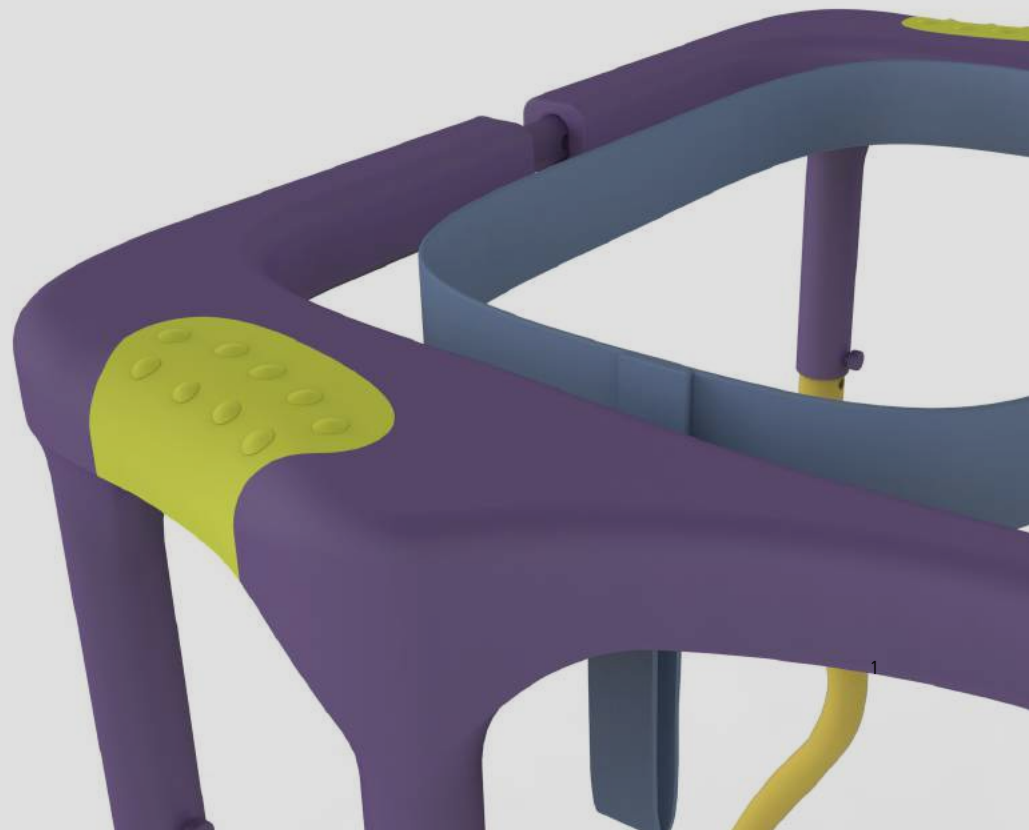


WALK SAFELY AND ELEGANTLY.

NO FALLING

EXERCISE

NO HANDS





Problem Statement

Walkers in the market are almost the same, so they cannot fulfill the variety demands of people who need a walking assist. All of them require people to use hand to hold or push them. It makes the user to walk in an awkward gesture, and cannot prevent falling one hundred percent. They use straight metal pipes as frames, which is too strict and not appealing.



Solution Description

This new walker will have the following functions:

Attaching on the waist, move with person without hands holding.

Four wheels enable rolling smoothly.

Wheels can draw back into the legs while being pushed.

After wheels draw back, it can stand stable on the ground, prevent people from falling down.

Width and height are adjustable.

Free between waist support and the frame in a certain range.

The walker can be lifted up, enabling walking up and down stairs and buses.

Beautiful appearance.

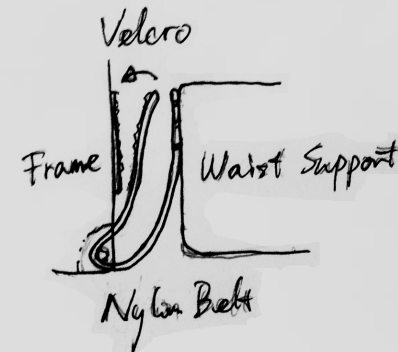
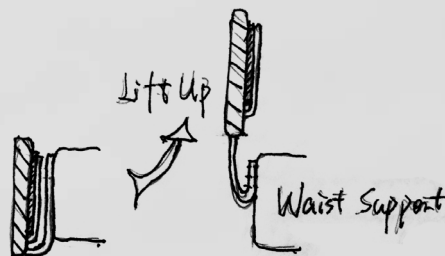
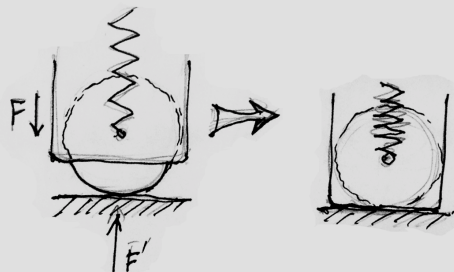
Two versions:

1. with a waist support

This is for people who are under a medical therapy or recovering.

2. with a narrow belt

This is for normal use, more relaxed and easier to take off.



Design Process - HCD Toolkit



HEAR



Beginners Mind



Group Interview



Individual Interview



Expert Interview

In the Hearing stage, individual interview is the most constructive method. The people I interviewed have provided lots of useful information to me, such as the uncle in China, who told me his idea of the walker.



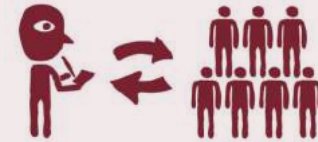
CREATE



Brainstorm Warm Up



Diagrams



Build On The Idea

In the creating stage, brainstorm and build on the idea are both very helpful to me. Brainstorm helps me to generate wild and creative ideas and then refine and improve the idea by communicating with people.



DELIVER



The Learning Loop



Evaluate Outcomes



Try Out A Model

In the deliver stage, the learning loop is really important. It helps me to refine my design again and again when I show them to different people and get useful feedback.

“Walkers and cans should be sexy.”

“Many things just need to be a little better. I want to use them to express myself.”

“They have to be beautiful. I want to be proud of them, when I show off in front of my friends.”

“I want to continue doing what I’m doing now many many years later.”

*--Voice of elderly
from Stanford Center on Longevity*

"I want to go out, but sometimes the basic action becomes my problem. I have a hard time to get up from chairs."

"I have to lift myself by pushing on armrests, or ask someone for a hand."

--group interview in Next Village





Dr. Maozhen Zhang

65 years old

PHD of Shanghai Jiao Tong University School of Medicine,
Professor of Xinhua Hospital Department of Cardiology

“I don’t want to give up the job I have been doing for my whole life, which reflects my personal worth as well as attributes to the society.”

“I just hope my brain won’t go wrong, don’t influence the ability of living independence.”

“I couldn’t see the words clearly, and get swelled head after long time reading. What a pity!”

“Some emergency calling, self-management equips and motivation secure devices will be very helpful to them.”



Dr. June M. Fisher, MD

83 years old

Clinical Professor, School of Medicine, Division of Occupational and
Environmental Medicine, University of California

“I’m addicted to my iPad. Sometimes I just sit there and play

with it. Before I have noticed, 12 hours passed. I tried to use an alarm clock to notice me, but I don’t wanna get up when it alarms. So there should be something that can make me stand up.”

“I don’t wanna buy more products. Things in my home is too many, but I’m unable to throw them away.”

“It’s inconvenient to hold two sticks in my hands. I want to free my hands.”



Yukun Zhang

80 years old

Retired doctor, Dermatological Department, Huaihai Hospital,
Shanghai, China

“I couldn’t find a walker in the market that can fulfill my need.”

“I want to recover from the surgery and regain my walking ability.”

“I want to walk more and exercise more, but I’m afraid of falling.”

“Waist support can help people walk in a better gesture, this is what my therapist told me to use.”

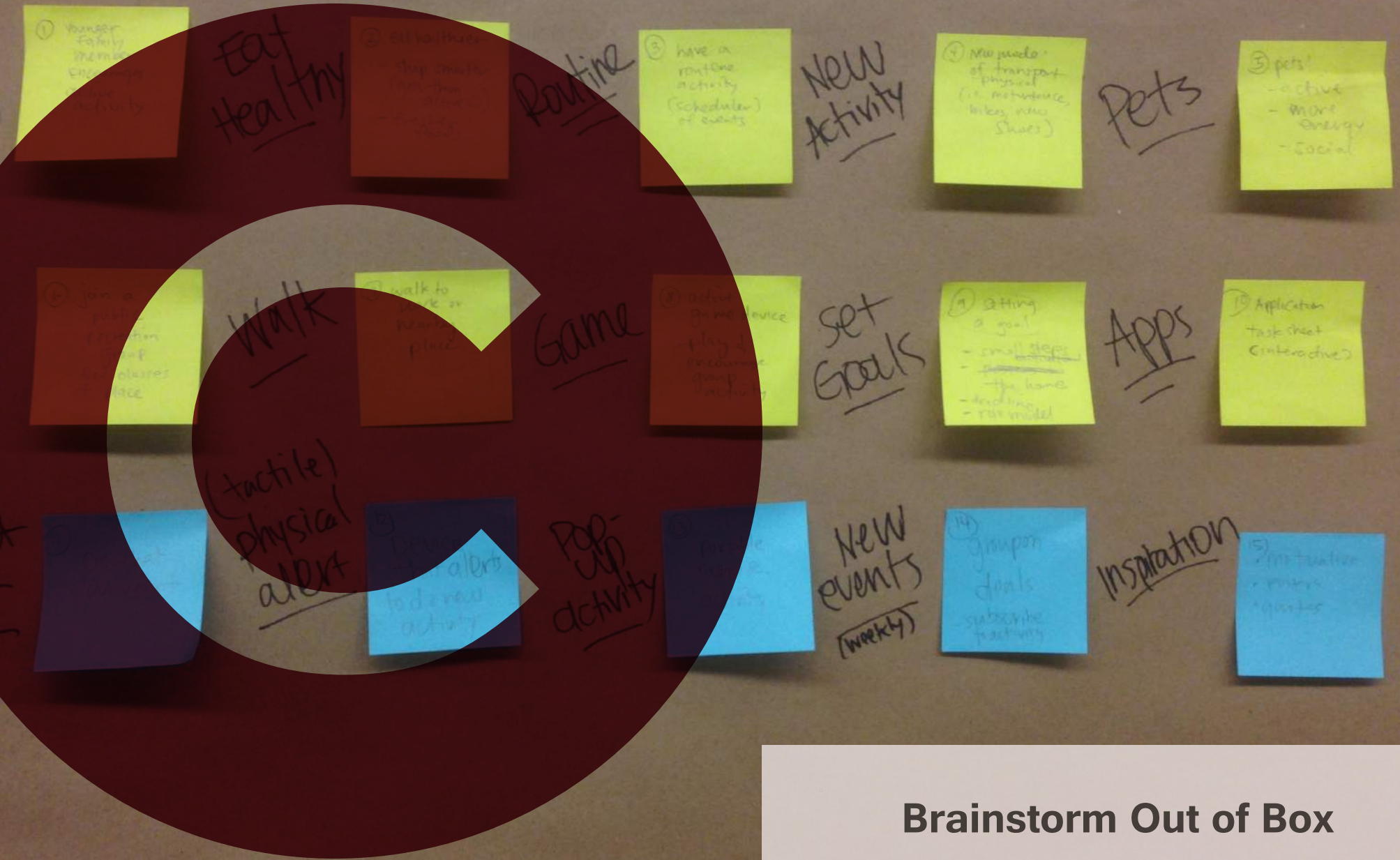


“Mobility is the biggest reason for people leaving their home.”

“A lady living in wheelchair has to put all her things on the floor, because she cannot reach them on the shelf.”

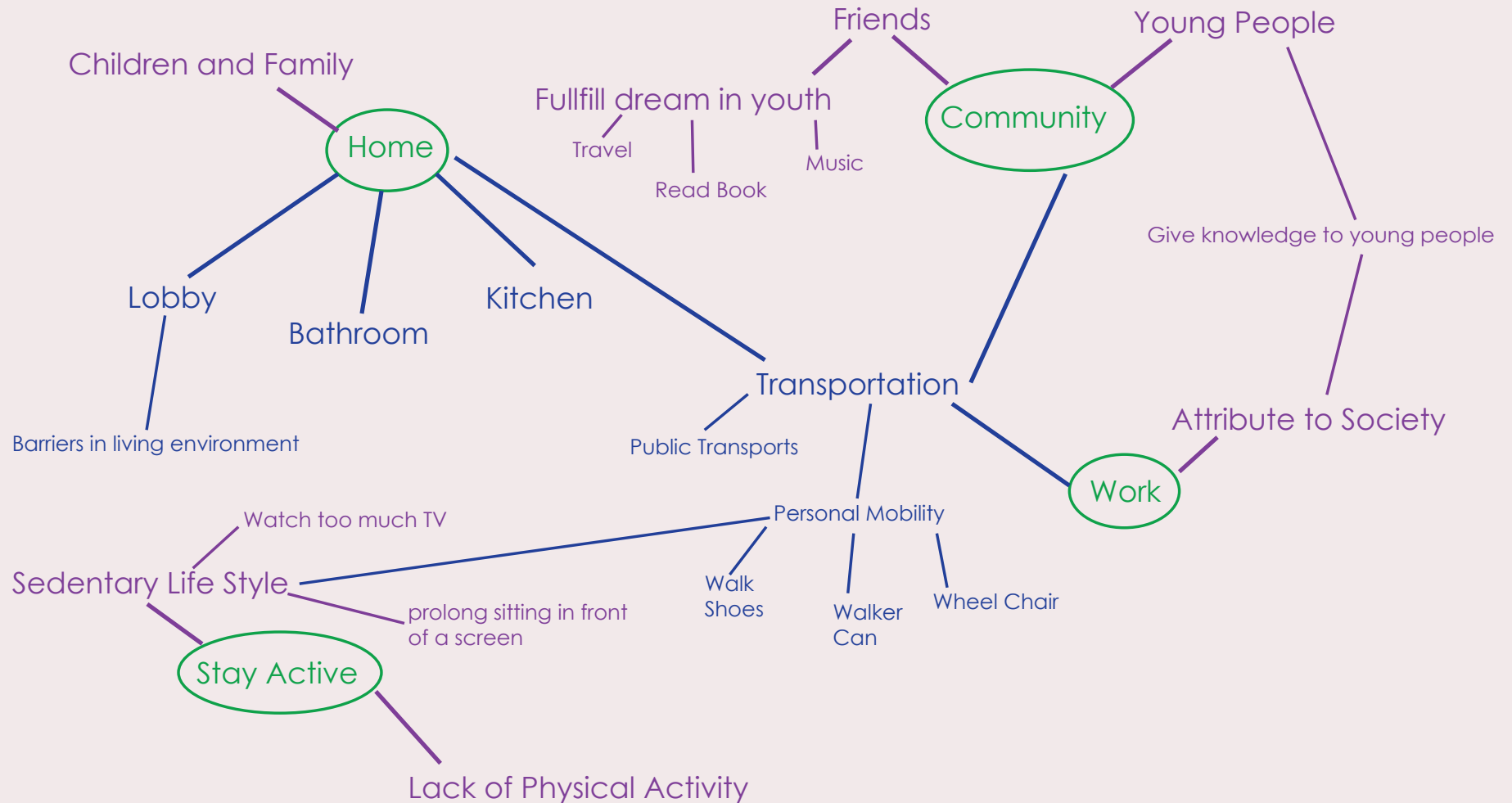
“People don’t like to use walkers at home, they prefer to walk around by supporting themselves on pieces of furnitures.”

-- Jaequeline, Next Villege



Brainstorm Out of Box

Living Environment Evaluation



Inspirations



Inspirations

My idea of this new walker comes from Yukun Zhang, the gentleman I interviewed. He told me about what his ideal product might be. And I keep talking to him, showing him my progress, and asking for feed back.



Market Review



\$39.60

"I have a broken foot and need to be non-weight-bearing for some weeks. This walker is mostly okay but is not all that light. The problem I really have with it is that the hand-holds are poor--hard ribbed rubber that was abrading and wearing away the skin on my palms."

"This is a sturdy and light walker. As others have mentioned, the handgrips are not very comfortable."

"Light and strong, accrding to my MIL, and can bring in cars by folding."

\$49.50

"Hard to push down the button to close one of the two sides. Good thing is that it is light weight."

"The walker will get through doorways much better if the wheels are reversed so that they are inside the walker and not outside."

"Hard to roll outside. So, I put tennis balls on back legs and it improved some."



\$58.09

"This walker did not suit my needs. The handles are not sturdy and slip. The position of the basket is awkward."

"While it operates as expected when in one place, it is very heavy and hard to fold for transporting."

"You have to really press hard on the handbrakes to keep the Rollator in place if you want to steady yourself while standing up."

Mapping Matrix

Simple



Flexible



Sturdy



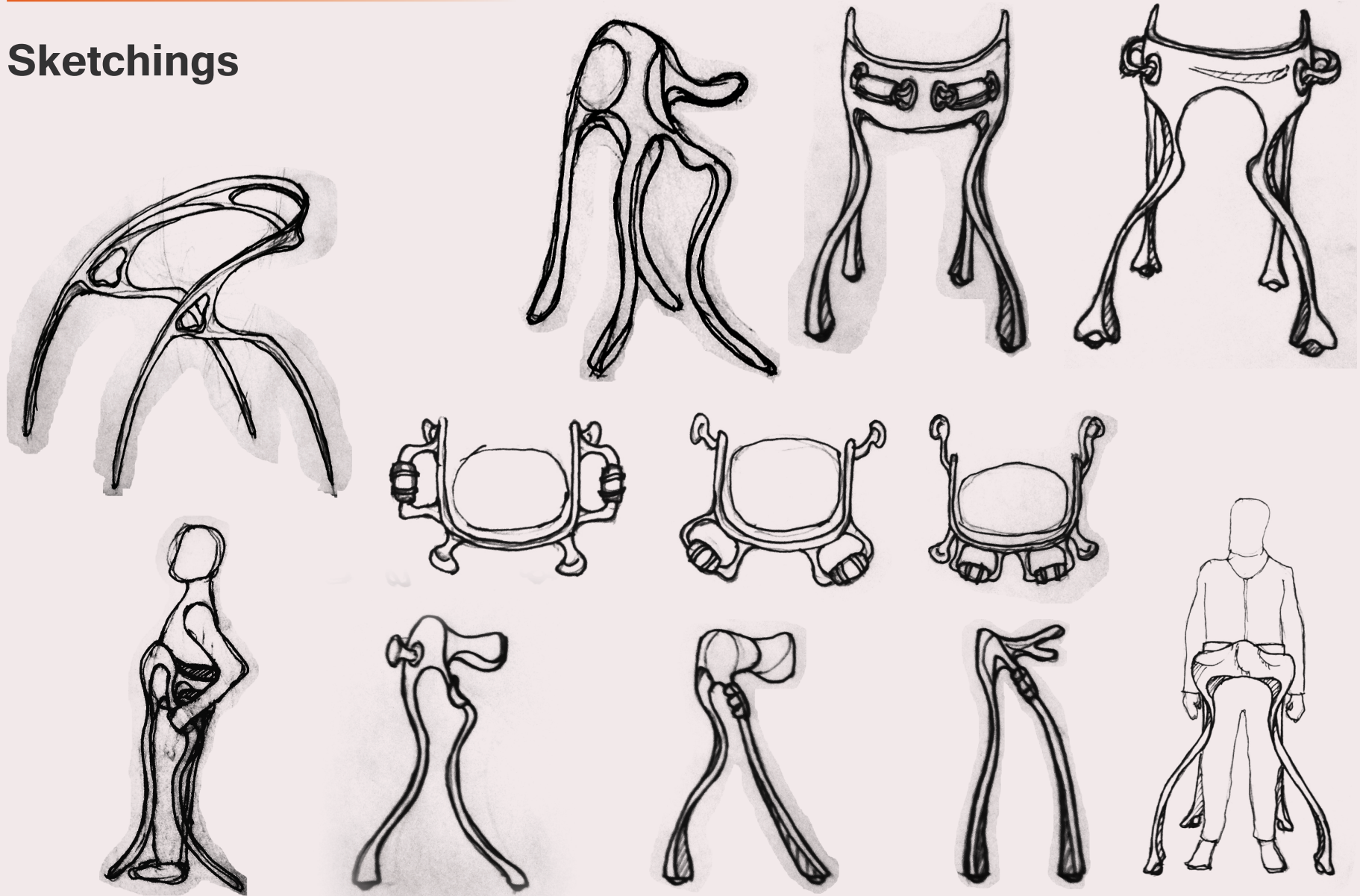
complicated

Inspirations

"The product should be beautiful, elegant and sexy."



Sketchings



The sketchings are study of the appearance of the new walker. People all love beautiful things rather than strict lined products. So I get inspiration from organic shapes and want my product to be vivid and dynamic.

A visit to an awesome 92-year-young lady, who used to be a fashion designer. Ask for feedback on my walker design.



Persona



Jimmy

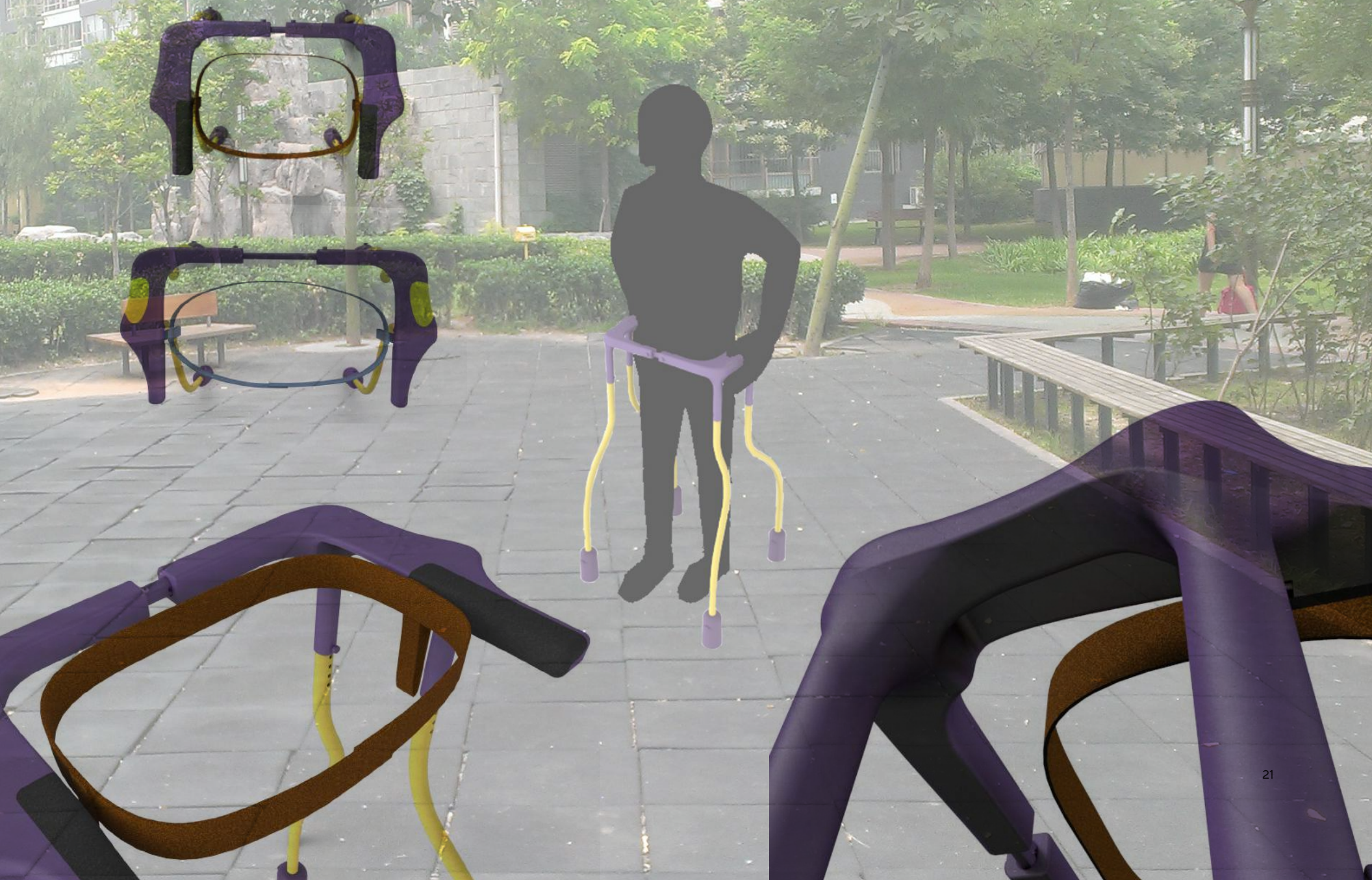
82 years old, male

Jimmy is a retired professor of medicine school. He used to work very hard and he loves his job. Even after retirement, he still went to work frequently. However, he suffered from a disease months before and have been through a surgery. After that, his muscle became weak, and he can only doddle around, being afraid of falling down. He loves to go out and meet people, but doesn't want to use walkers, because they are ugly and take over his hands.



Rapid Mock-up

3D Models



3D Models



Prototype



Material Using:

Final product:

Carbon fiber to shape the frame.
Waist support or nylon belt attach
to the frame with velcro.

Add standard casters in the
bottom.

Estimated cost: \$50

Prototype:

3/4" EMT pipe bend to the legs'
shapes.

3D print other parts.

Estimated cost: \$150



User Test



The prototype is too fragile, weak in the front, the width adjust place. Wheels don't work as good as I thought. The design still has to be refined.

