05

"T-Sit"

A standing assist design for workers who are coping with prolonged standing in the workplace.

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/ Introduction

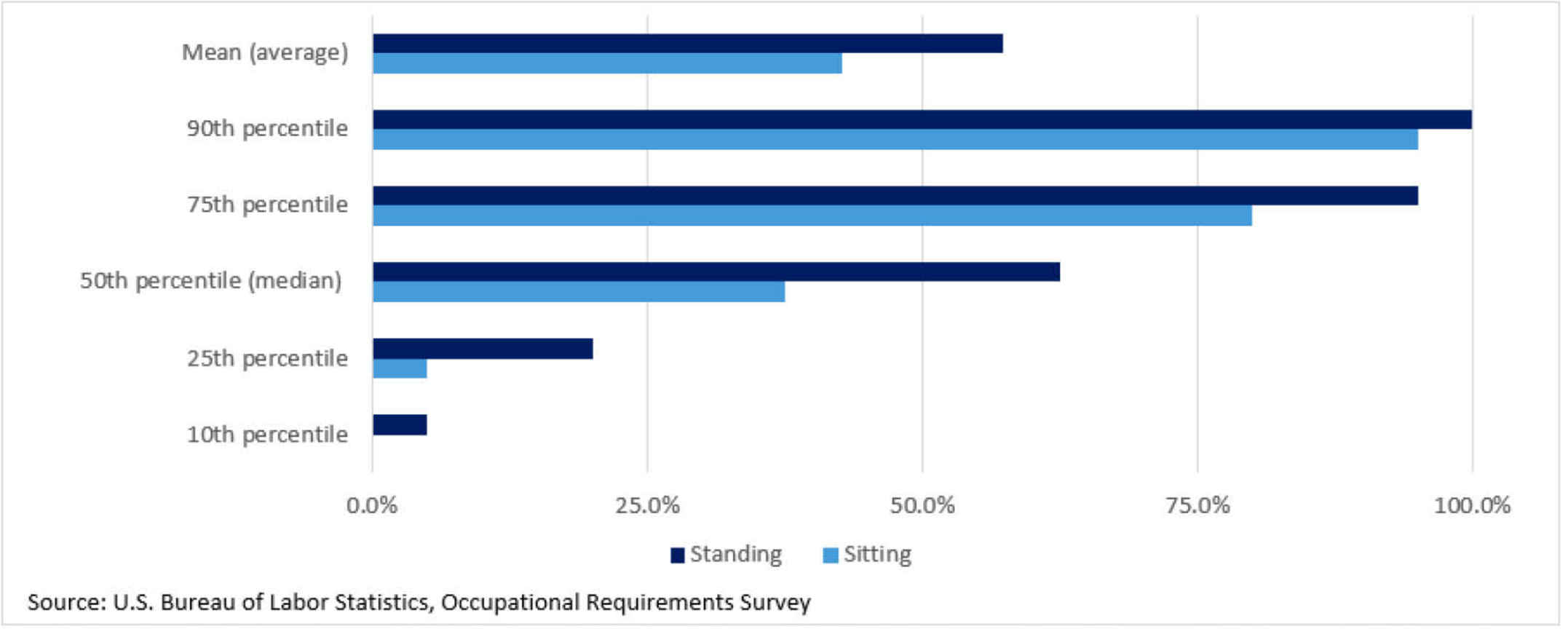
"T-Sit" is a sit-stand chair that is easy to carry and allows workers who are constantly moving around and standing for a long time during their work. This design always provides them a seat whenever they go.

/ How To Use

The operation is simple. 1) Carry T-sit on your back to wherever you want to go. 2) Drag T-sit and place it where you want to sit. 3) If you stand up, the seat will automatically retract to your side.

BLS
BUREAU OF LABOR STATISTICS
U.S. DEPARTMENT OF LABOR

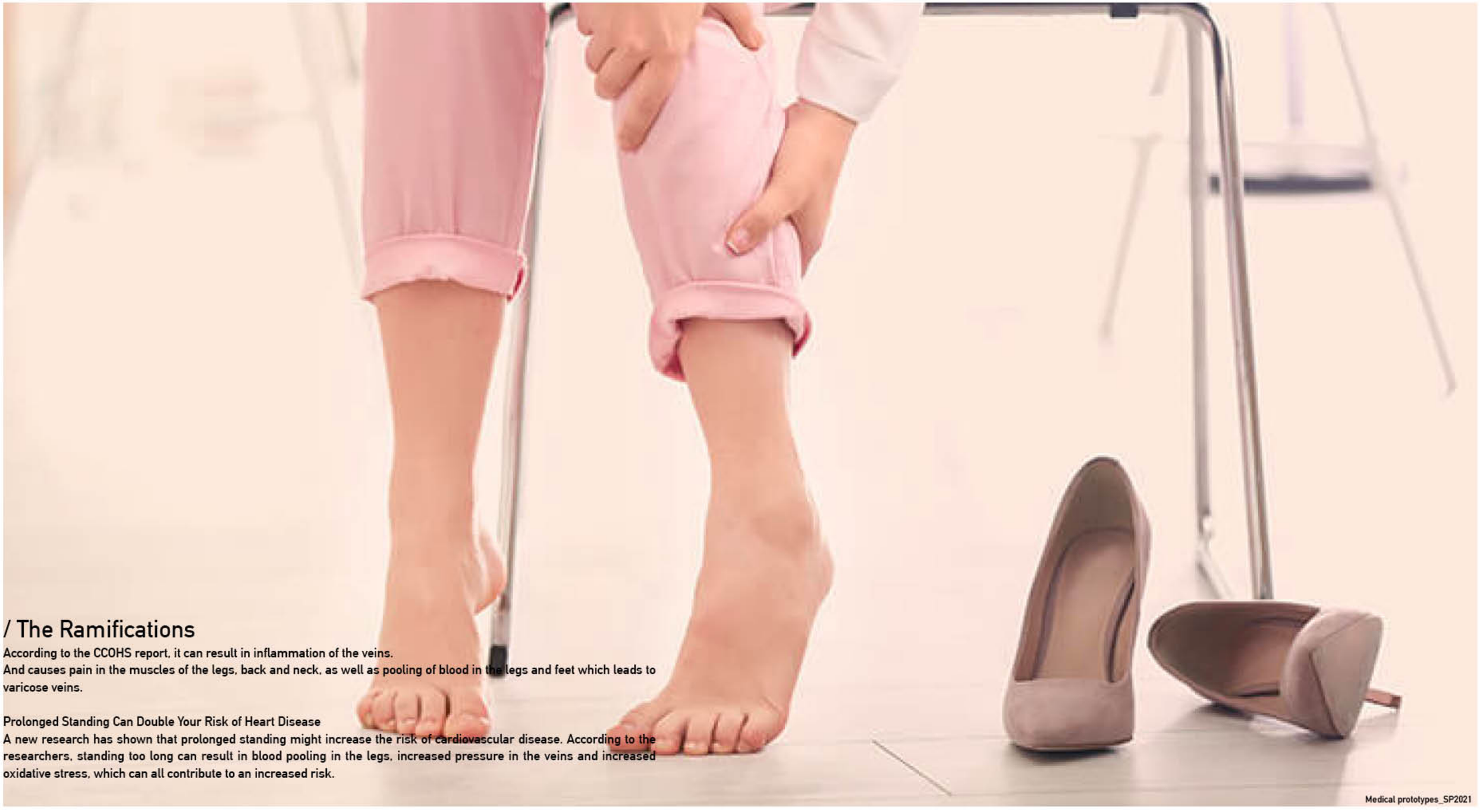
Chart B. Percentage of the workday required to sit or stand for civilian workers, 2020



Source: U.S. Bureau of Labor Statistics, Occupational Requirements Survey

/ Sitting and standing : U.S. Bureau of Labor Statistics

On average civilian workers spent 42.7 percent of the workday sitting and 57.3 percent standing. Percentile estimates provide a range of requirements among workers. For example, at the 10th percentile, workers were required to stand for 5.0 percent of the workday while at the 90th percentile, workers stood for 100.0 percent of the workday.. At the median, workers spent 37.5 percent of the workday sitting and 62.5 percent of the workday standing. (See Chart B.)



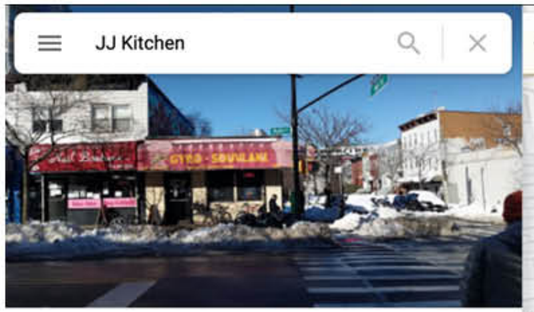
/ The Ramifications

According to the CCOHS report, it can result in inflammation of the veins.
And causes pain in the muscles of the legs, back and neck, as well as pooling of blood in the legs and feet which leads to varicose veins.

Prolonged Standing Can Double Your Risk of Heart Disease
A new research has shown that prolonged standing might increase the risk of cardiovascular disease. According to the researchers, standing too long can result in blood pooling in the legs, increased pressure in the veins and increased oxidative stress, which can all contribute to an increased risk.

/ Cooks

The most standing-heavy jobs are in food service, cleaning and retail. Cooks (2.6% sitting) and housekeeping cleaners (3.5%) are on their feet just about all day.



JJ Kitchen

4.4 ★★★★½ 63 reviews · $

Chinese restaurant

Directions · Save · Nearby · Send to your phone · Share

ORDER ONLINE

✕ Dine-in · ✓ Takeout · ✓ No-contact delivery

Ad · Order Seamless Food Delivery

JJ Kitchen - Brooklyn, NY - Delivered by Seamless

ORDER NOW · www.seamless.com/

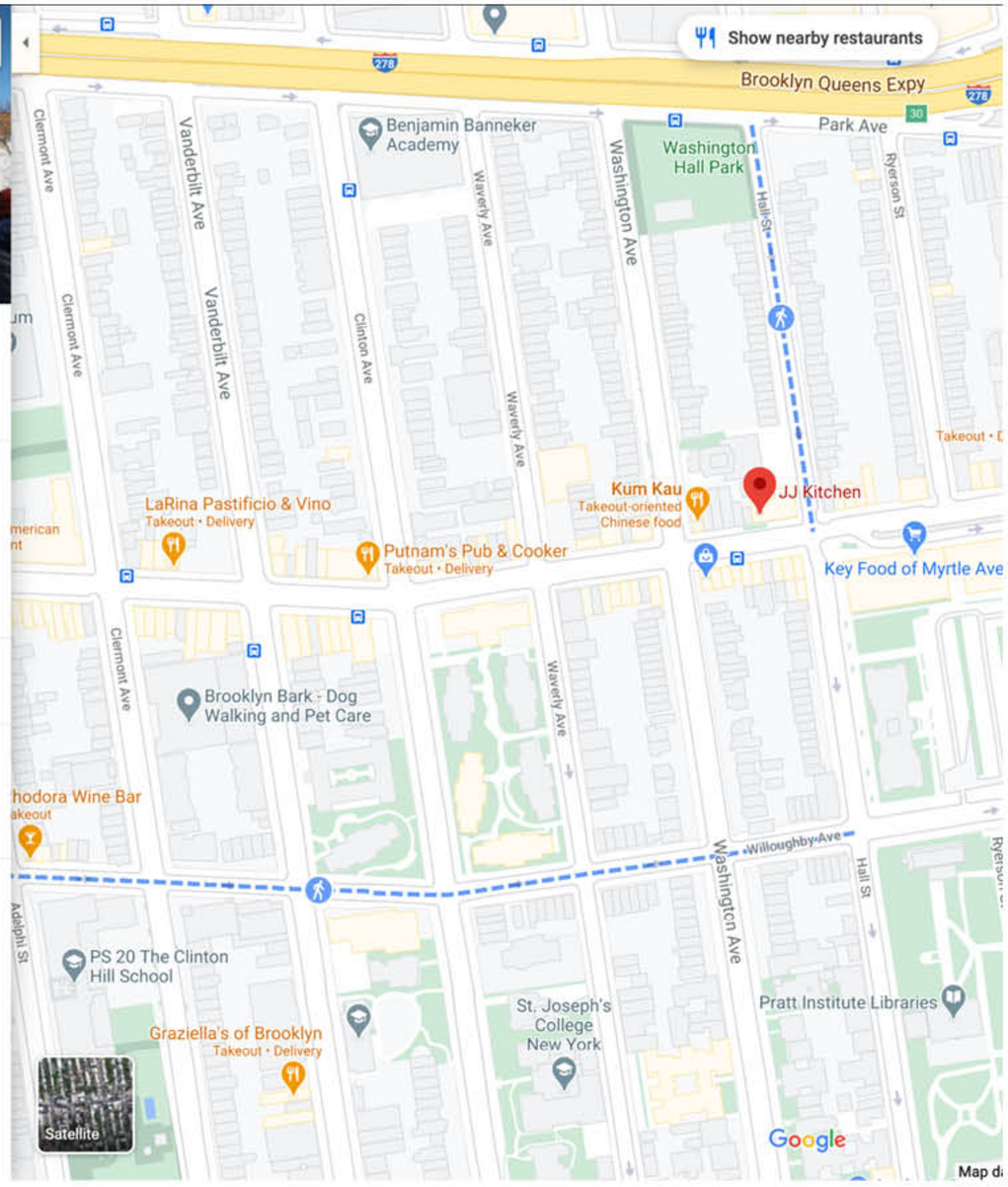
475b Myrtle Ave, Brooklyn, NY 11205

Closed today

Place an order

Find a table
jjkitchenbrooklyn.com

Menu
jjkitchenbrooklyn.com

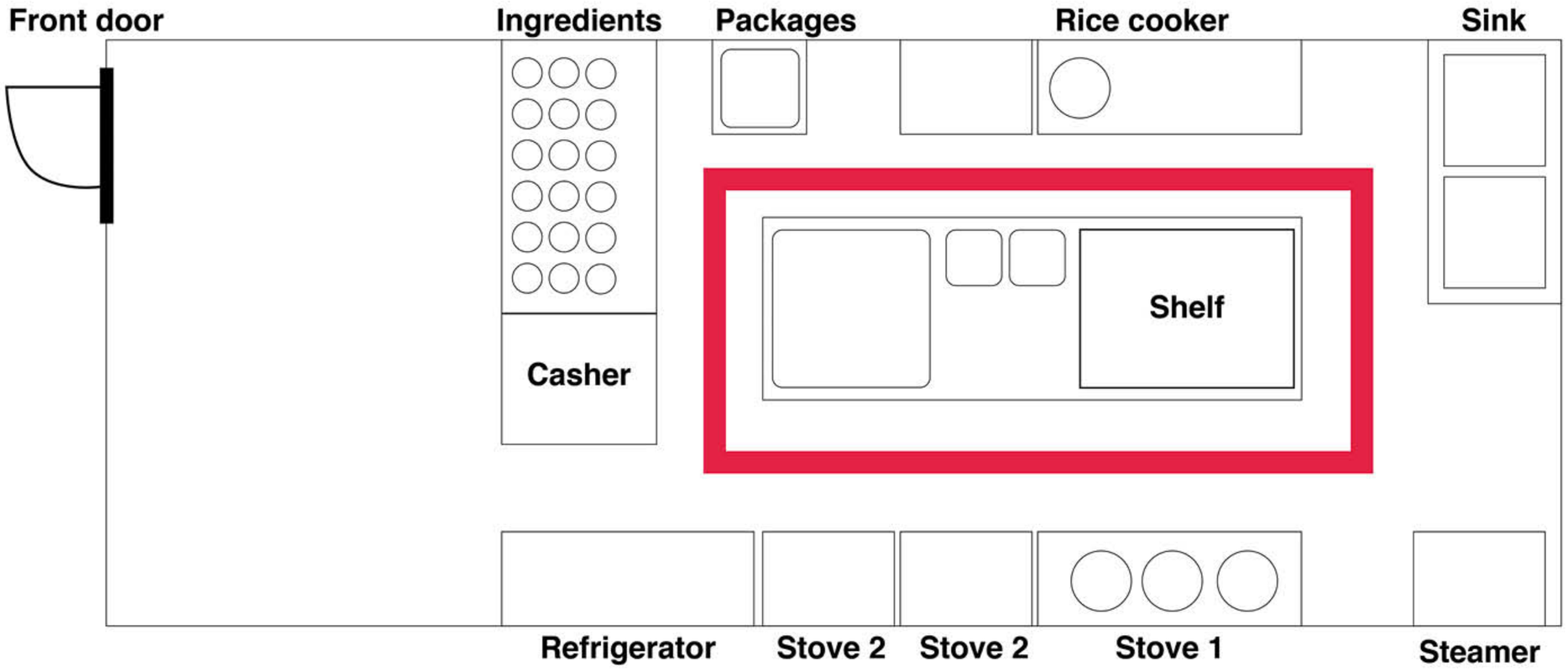


/ Interview and observation

To investigate the target users, I got permission to interview a cook who works in JJ Kitchen, a Chinese restaurant located in Brooklyn, and observing his behavior while cooking aimed for getting some insight.

Kitchen's layout

////*For interview and observation*



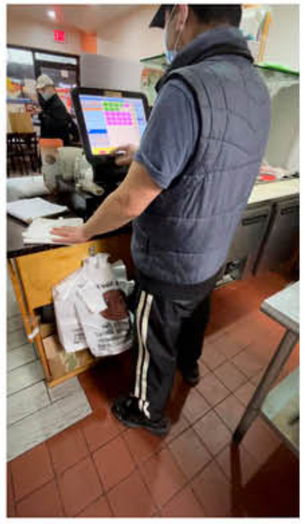
JJ Kitchen located on 475b Myrtle Ave, Brooklyn.

- Version: 02
- Dates :02/ 21/2021
- Middle Age (Male)
- 10+ years exprience
- Duration : 30 mins
- Interview+Obsevation
- Tool: Iphone

/ Genral Info

The kitchen's layout and is the place where I conduct the interview. The red area on the picture is the tracks of the cook mostly stay while making food. A cook is a Chinese man around 35 years old, and he has more than ten years of work experience in the food industry. In two-part, the first was an interview, and the second was observation while he is working.

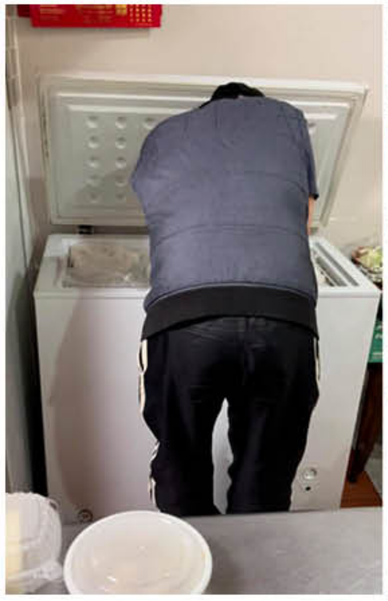
Drink

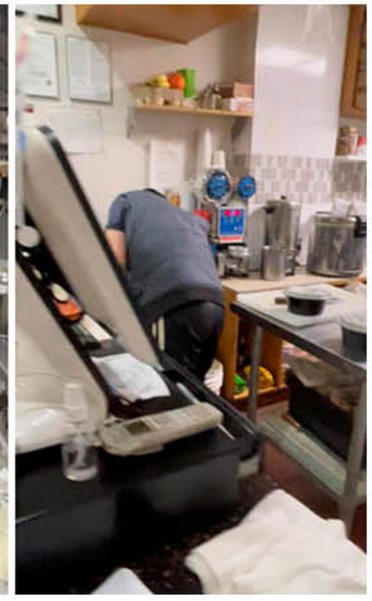


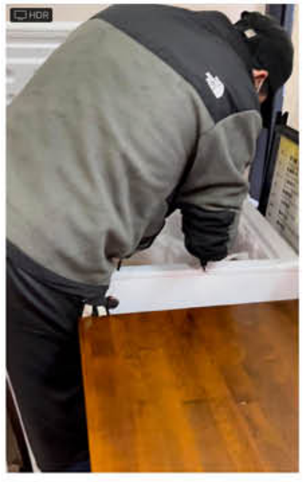
Chasing

Cooking

Center shelf

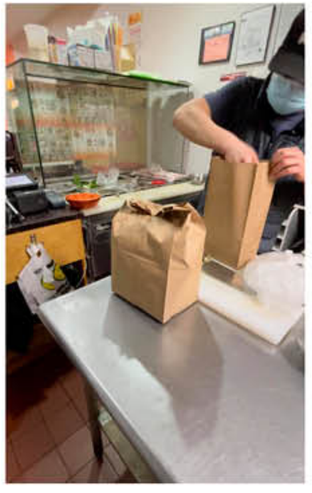






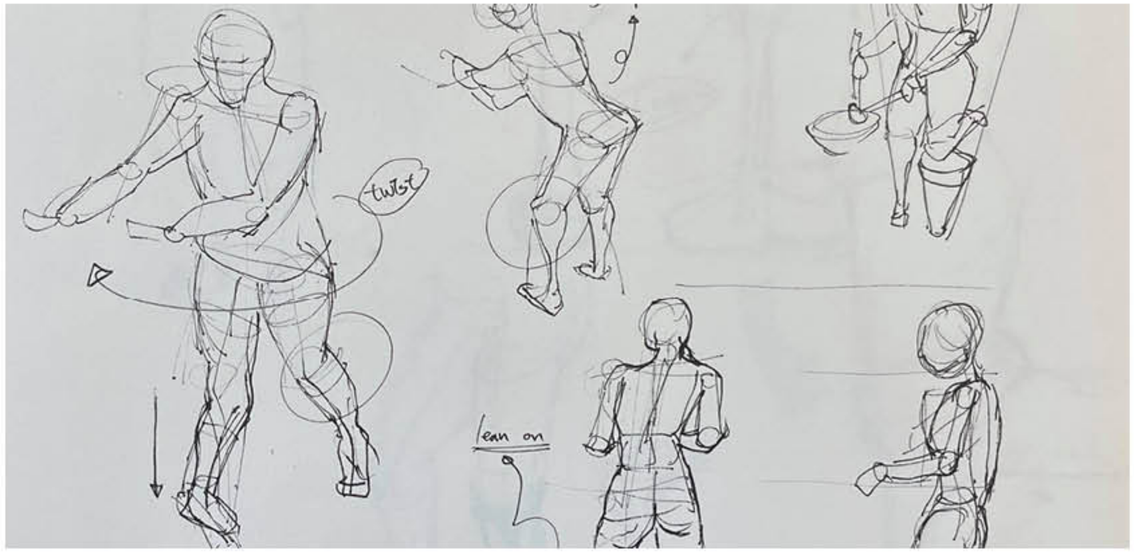
Refrigerator

Prepare



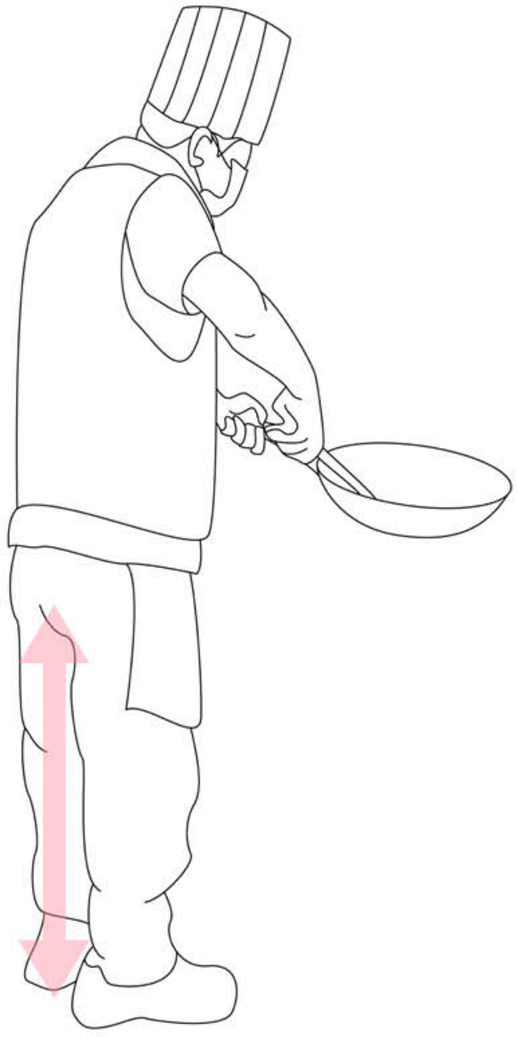
Packaging

Stewing



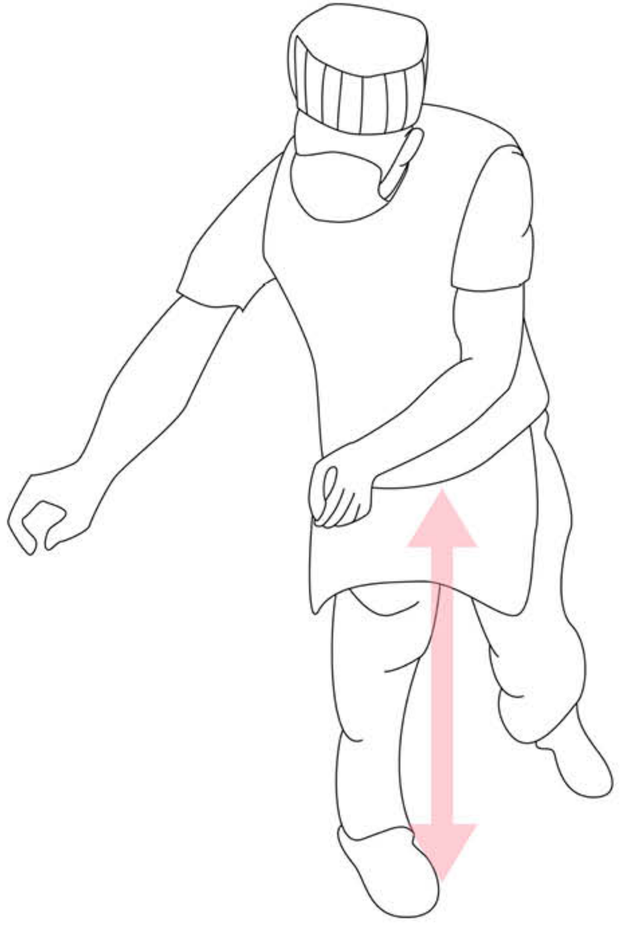
/ Postures

The video interview was about 30 mins; the objective is to investigate every posture during work for finding design opportunities. I studied the cook's posture by drawing several sketches and simplifying them into clear line drawings.



1. Standing straight when cooking.

2. Turning back to grab something when one foot stand straight.



3. Bending over to grab something from the frag with one leg standing straight.

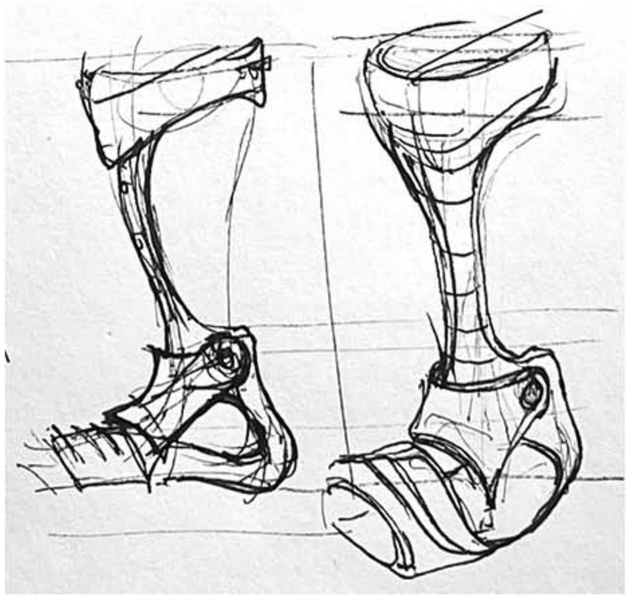
/ Insight

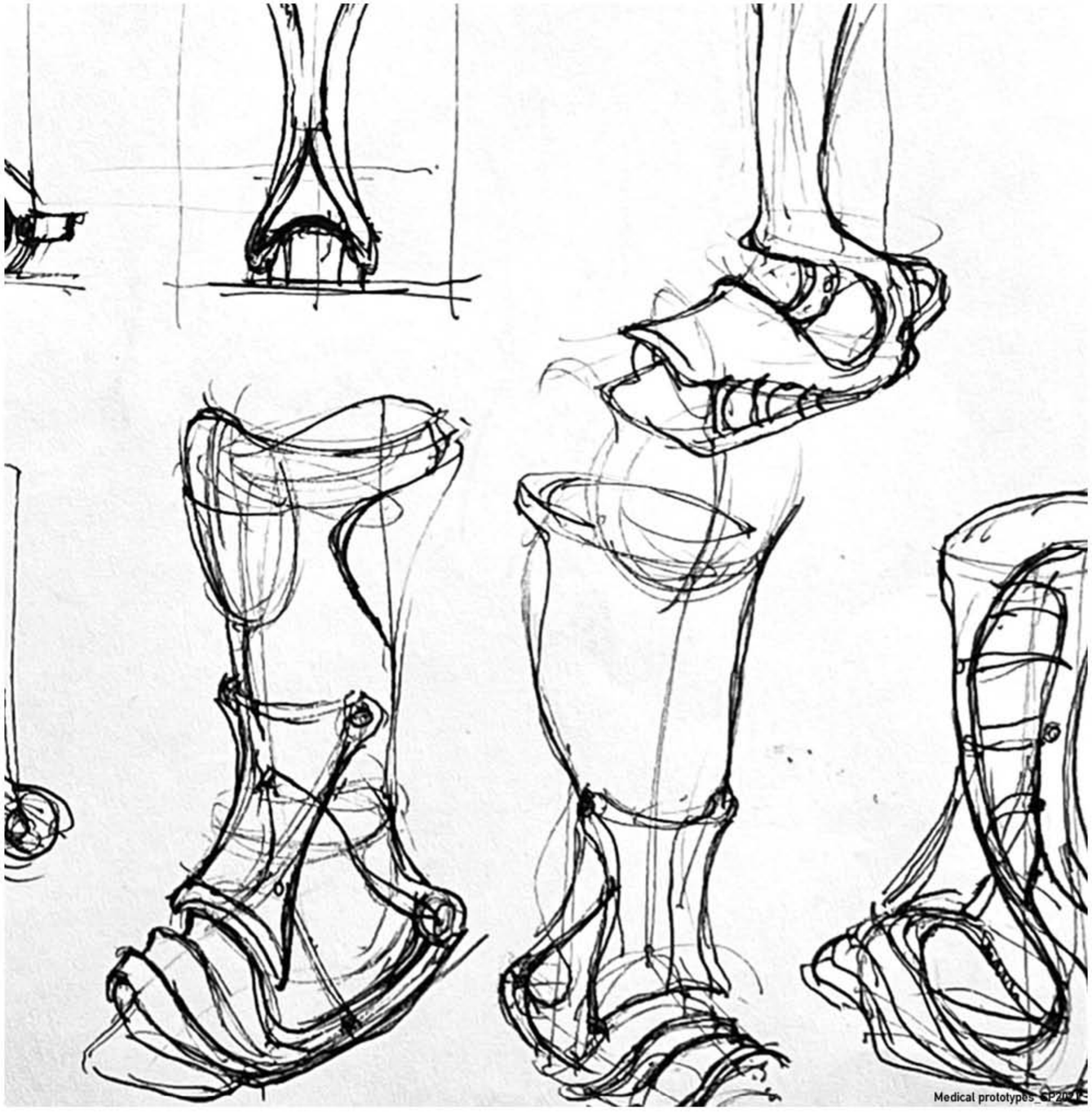
He always keeps his leg straight—no pose like squat down. If he wants to grab things from the floors, he bends over with his leg standing straight still.

01 /03

/ Concept 01

Referring to a leg armor's design, A initial standing assistant supports your knee to bend down to a 30-degree angle to distribute body weight. It's like wearing ski boots to prevent arch collapse; the support insole can reduces foot fatigue.



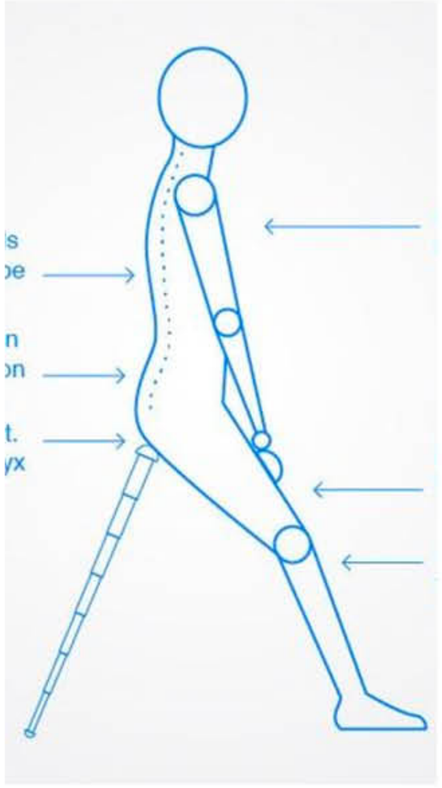


/ Materail and adjustable mechanism

I also consider using flats, rigid plastic, or metal sheet as the primary material to reduce weight and more comfortable for wearing. And design an adjustable system allows you to decide what bending angle is most comfortable for your knee.

/ TESTING

Mock-up made from paper and hardwood. The full-size model simulates how it works and how it feels. But, this direction didn't work out because this design only supports a little weight of the body.



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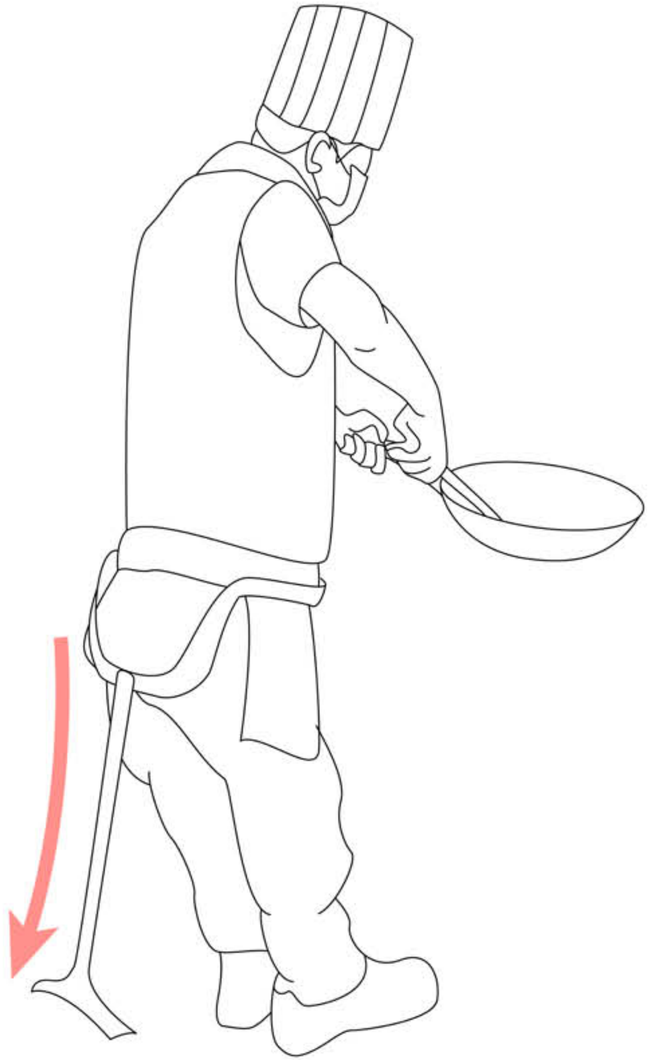
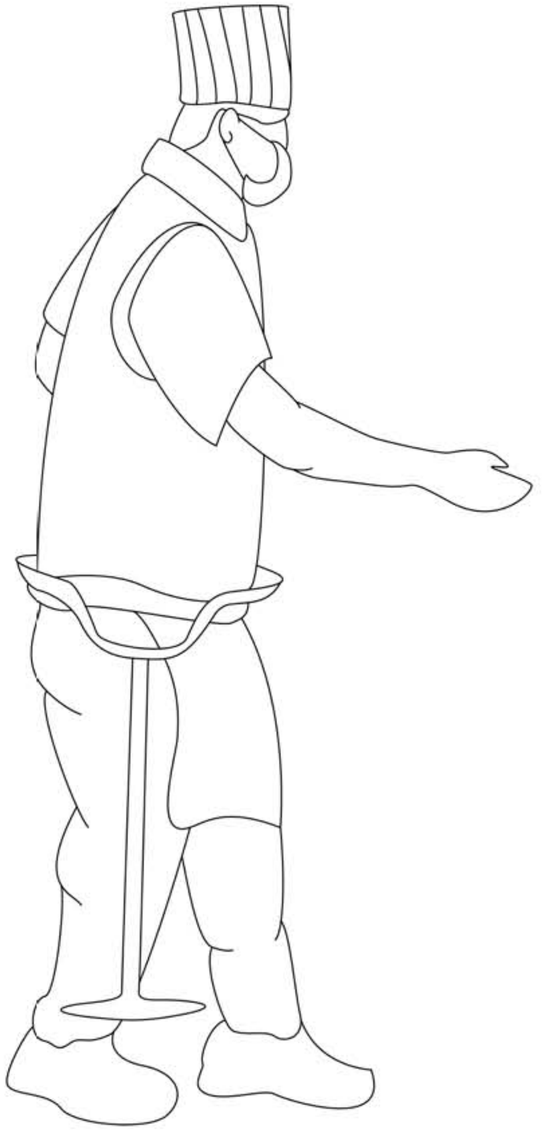
/ Concept 02

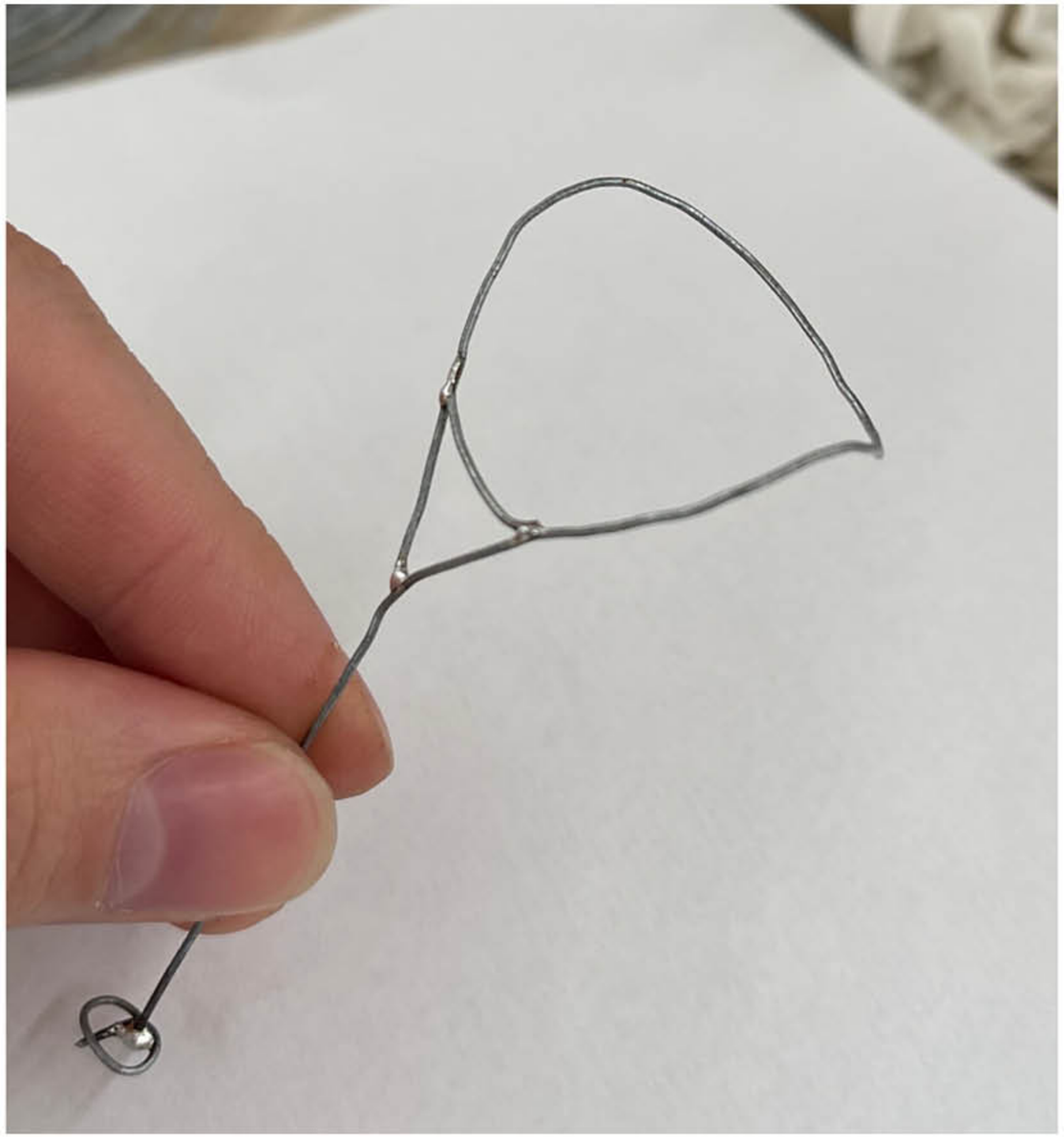
The second concept is to redesign the sit-stand chair like wearable garments. The sit-stand chairs exist in the market, but none of them are easy to carry. So I decided to make it lightweight and portable.

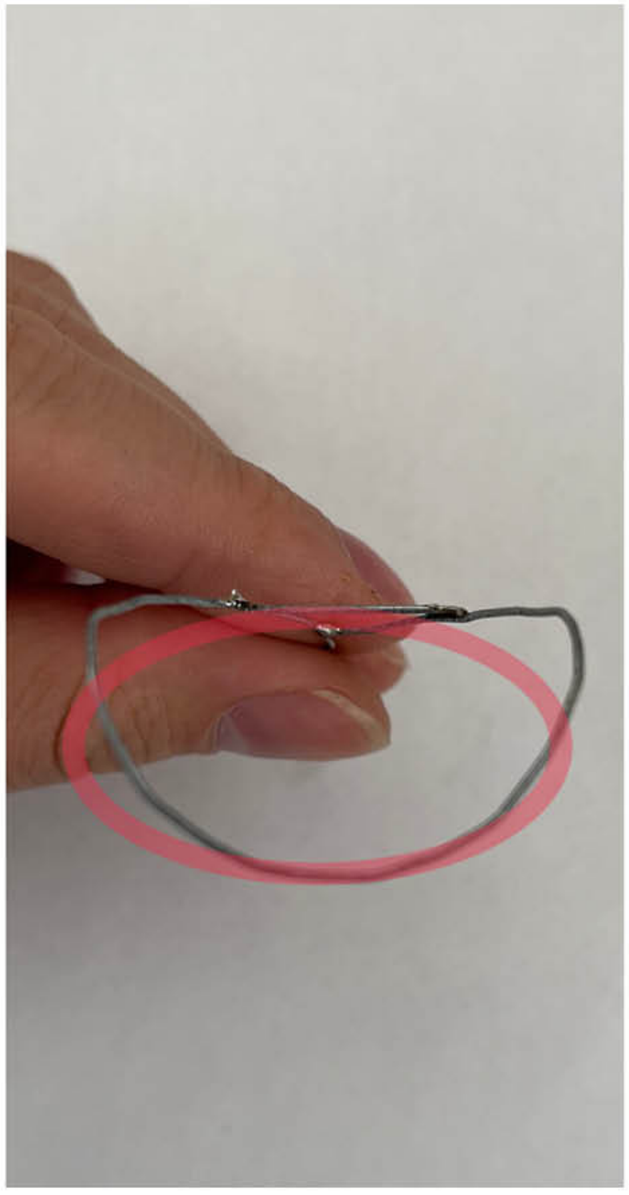




/ Idea

The idea aims to switch it to carry mode in a quick move. The user simply moves the sit-stand chair to the side and a mechanism and holds it on the users' waist to minimize the effort of using it.





/ Line studying

From the top view, when the user holds the seat and rotates it, more space to move around depends on the angle. And pull it down to lock it on the waist.

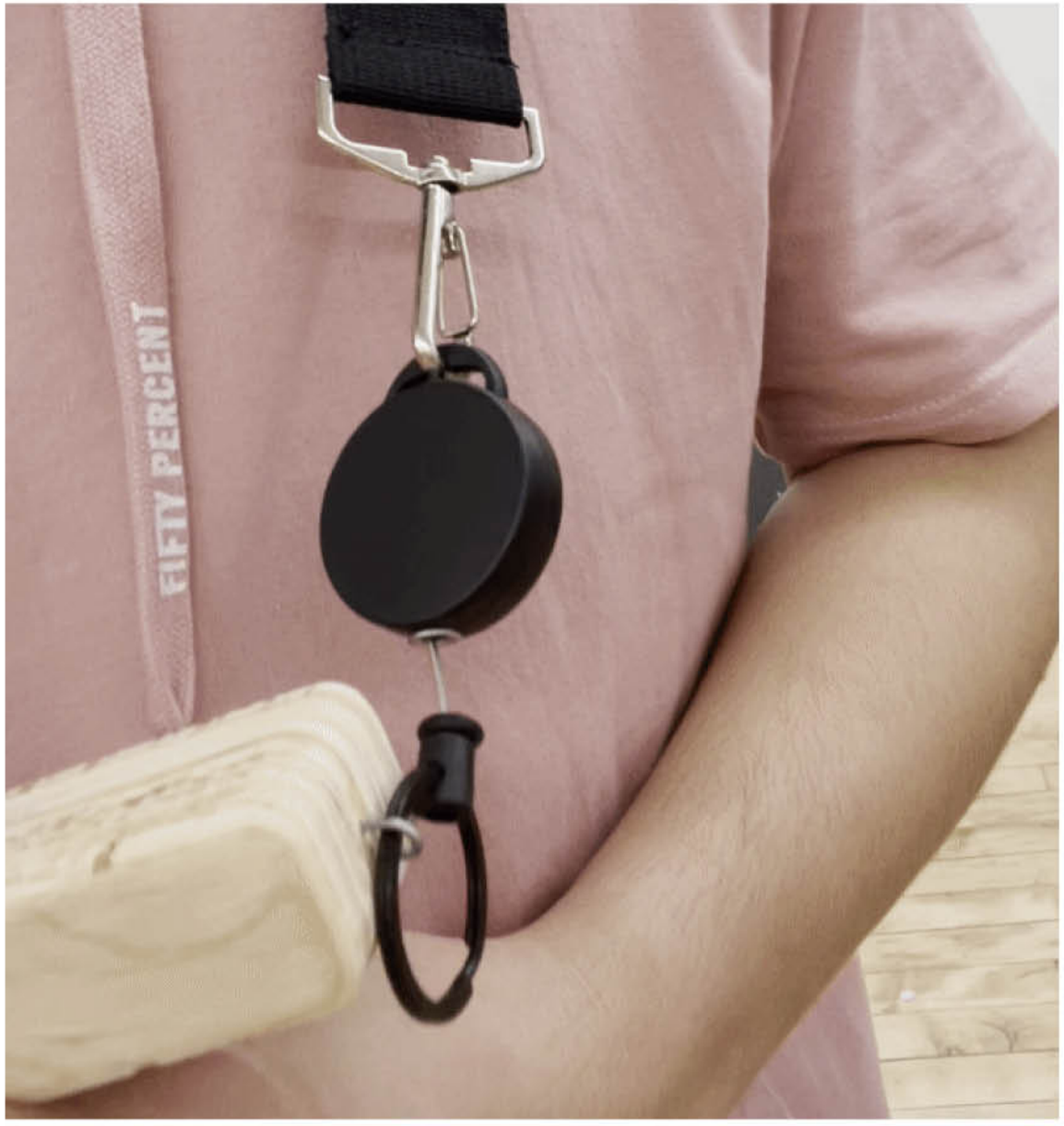
/ Prototype

Full-size model for testing. However, the shape is hard to fit in the body, especially their various size.

03 /03

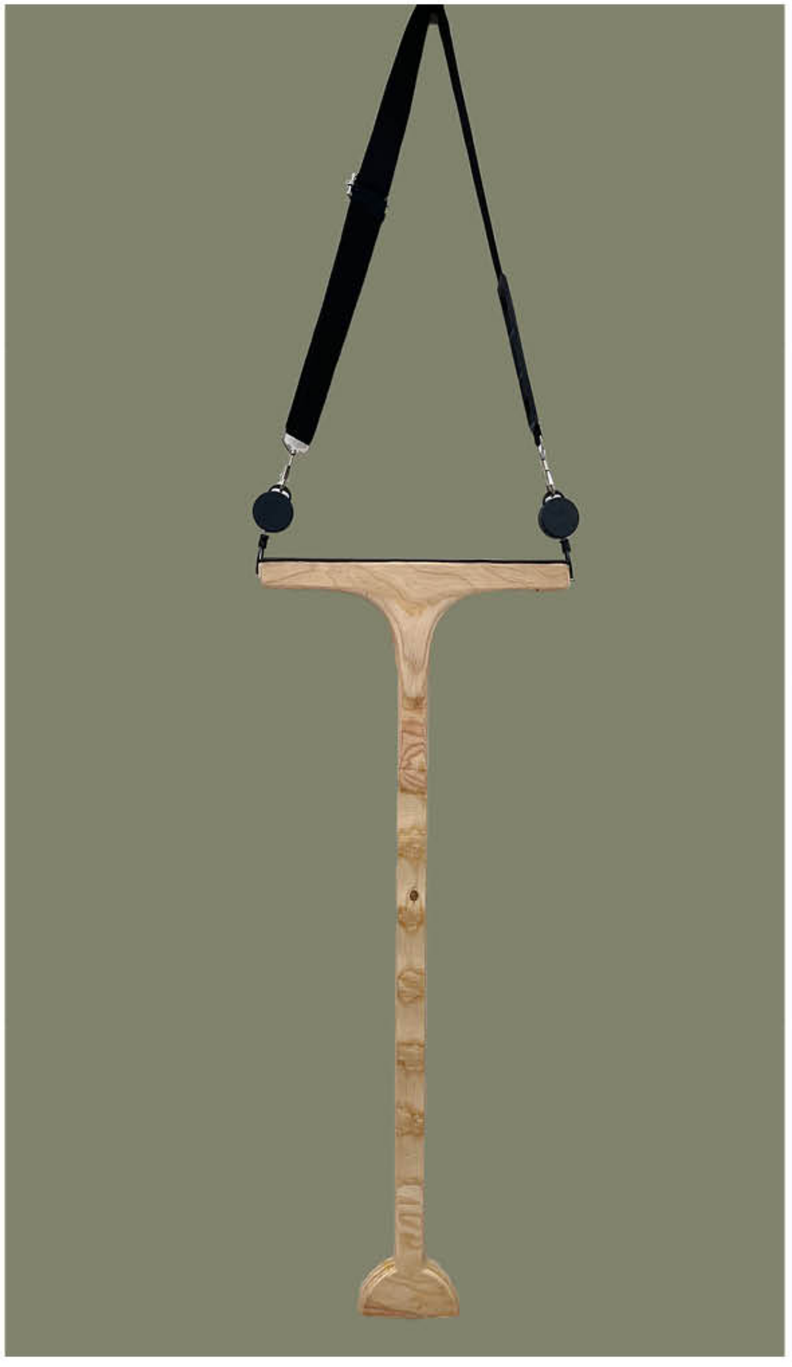
/ Retractable Mechanism

The final design is adding a retractable mechanism on the strip. It allows users to withdraw the sit-stand chair effortlessly.



/ Model Making

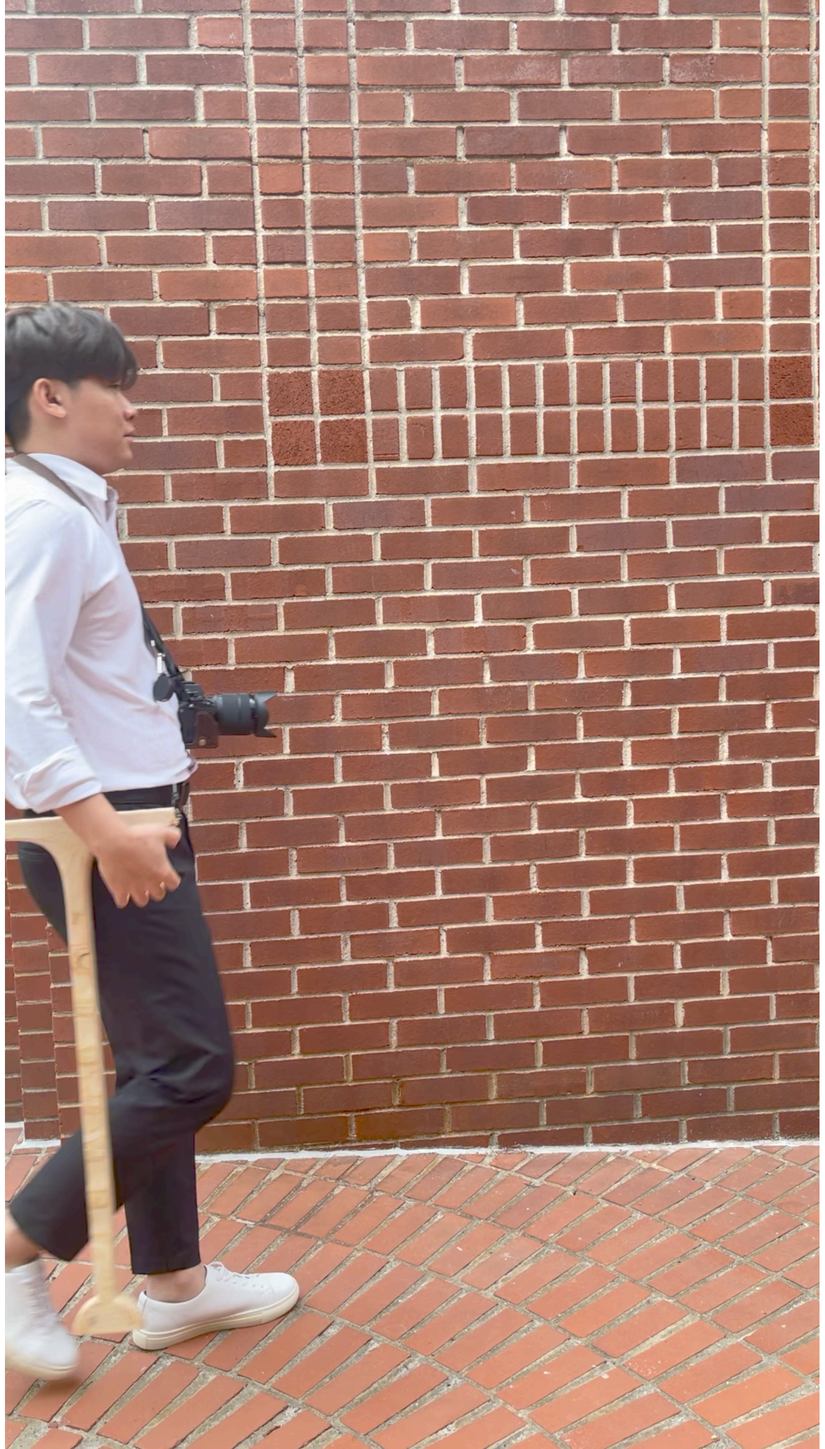
Materials are made from hardwood and leather for the seat part. CNC to cut out the basic shape and finished by hands. .

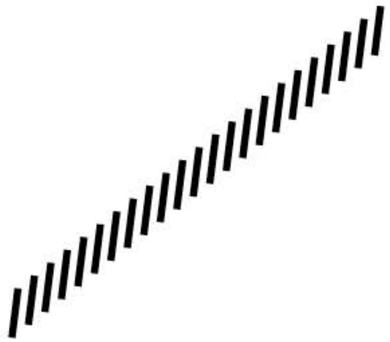


Medical prototypes_SP2021

Go Further

For the future study, this research looks into possibilities of wilder use in a different scenario. For example, a bird photographer needs to stand in place for a long time just waiting for the best moment of the bird photo.





Thank You .