
Innovators inclusivity project

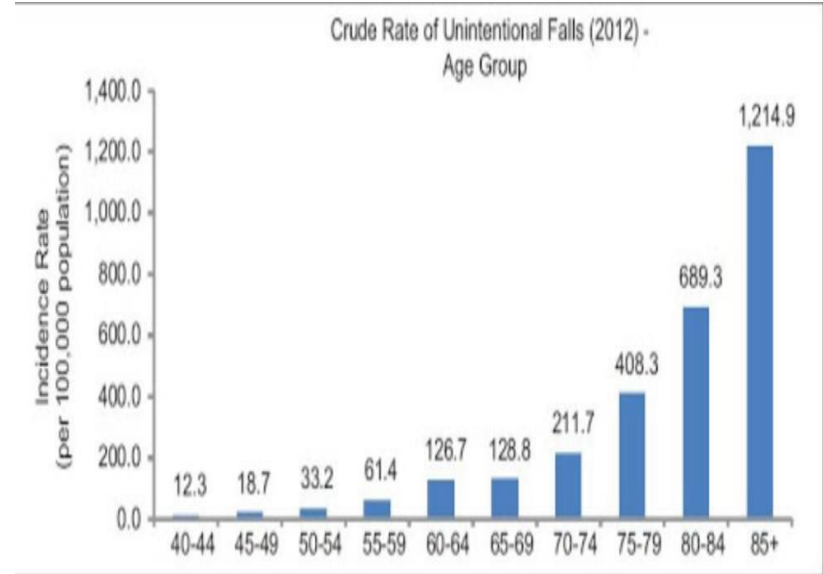
— (Le Qi & Xin Jie) —

Problem Statement!

Although there has been more lifts in housing estates, elderly sometimes need to walk up the stairs on certain occasions (for e.g. lifts under maintenance). However, climbing the stairs is a huge problem to them as it causes much inconvenience, danger and strength, especially when carrying heavy objects

Current situations in Singapore (1)

58% (1,448) of unintended falls occurred among adults aged 65 years or older according to the National Trauma Registry Report, in year 2012. This shows that fall risks among elderly is relatively high. Hence, by making a new product to ensure the safety of the elderly on stairs, we hope to decrease the fall risks among the elderly

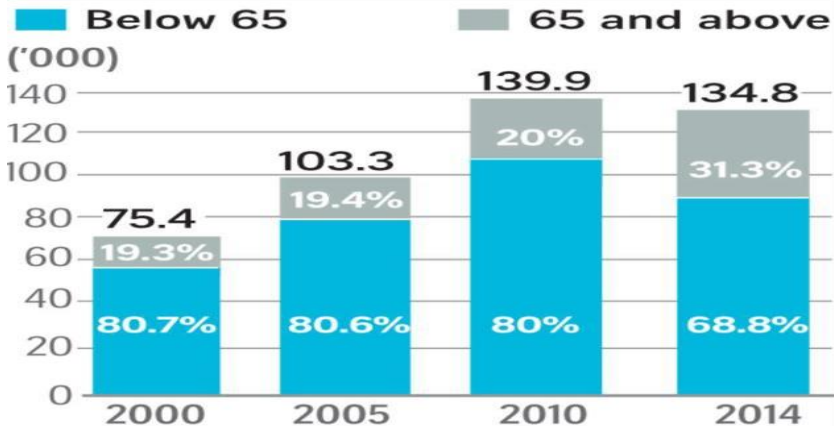


Taken from: Health Promotion Board–Ministry of Health Clinical Practice Guidelines: Falls Prevention among Older Adults Living in the Community
<http://www.smj.org.sg/article/health-promotion-board-ministry-health-clinical-practice-guidelines-falls-prevention-among>

Current situations in Singapore (2)

Living alone

One-person households by age of head of household



Source: DEPARTMENT OF STATISTICS
ST GRAPHICS

“Number of seniors aged 65 and above who live by themselves has tripled since 2000”

source:

<https://www.straitstimes.com/singapore/old-and-home-alone-in-singapore>

This shows that there's an increasing number of seniors without the supervision or assistance of others, therefore there is a need for us to innovate designs that can aid them that are also easy to use and very convenient.

Current situations in Singapore (3)



As shown in the image above, elderly with walkers need to hold the walkers beside them when climbing the stairs. As the walkers are sometimes bulky, the stairs tend to be not wide enough for both the elderly and the walkers. Additionally, climbing the stairs like this is highly unsafe and inconvenient for the elderly as they can fall easily

source: <https://mychart.geisinger.org/Staywel/html/Inpatient/3,86590.html>

Current solutions & their problems (walkers)



Walkers causes inconvenience when walking up the stairs because there isn't specialised functions for aid users in climbing the stairs

Current solutions & their problems (trolleys)

These are trolleys, they help to carry heavy items but it causes inconvenience to users, especially those with mobility aids when needing to carry trolleys up the stairs with them.



Current solutions & their problems (mobility scooters)

Mobility scooters are definitely one of the most convenient means for people with mobility aids, however, without the presence of lifts



What we aim to achieve:

1. allow better convenience and safety to help elderly climb the stairs
2. In our design, we also focus on minimising the tools and maximising the function (e.g. a walker with a bag)
3. an inclusive society

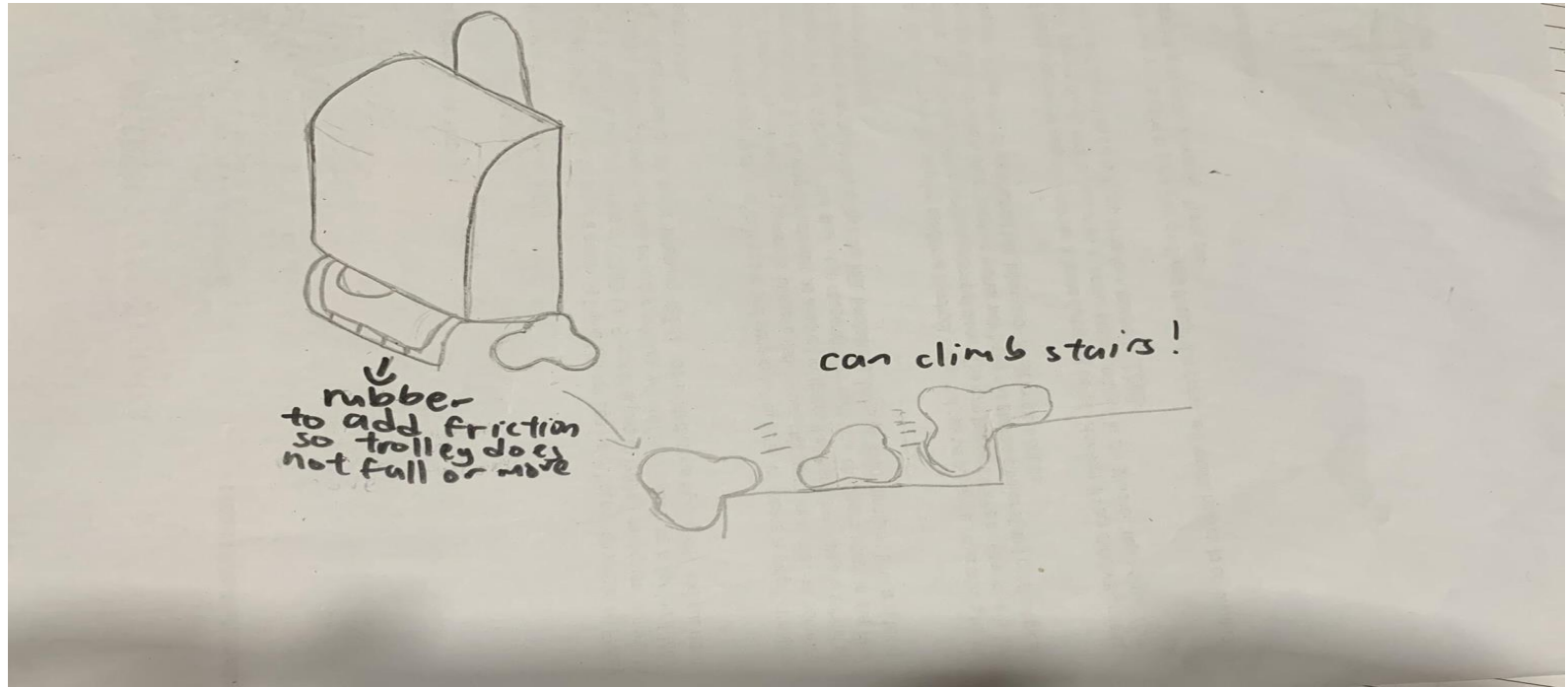
Generating our ideas!

Overview

1. The climbable trolley
2. Pivot trolley
3. Adjustable Walkers
4. Walker-trolley

Our ideas!

Idea 1: The trolley that can climb stairs



Our ideas!

Idea 2: Pivot trolley

TROLLEY THAT USES WHEELS AND A PIVOT POINT TO CARRY THE BAG UP THE STAIRS

bag
for
groceries



Adjustable

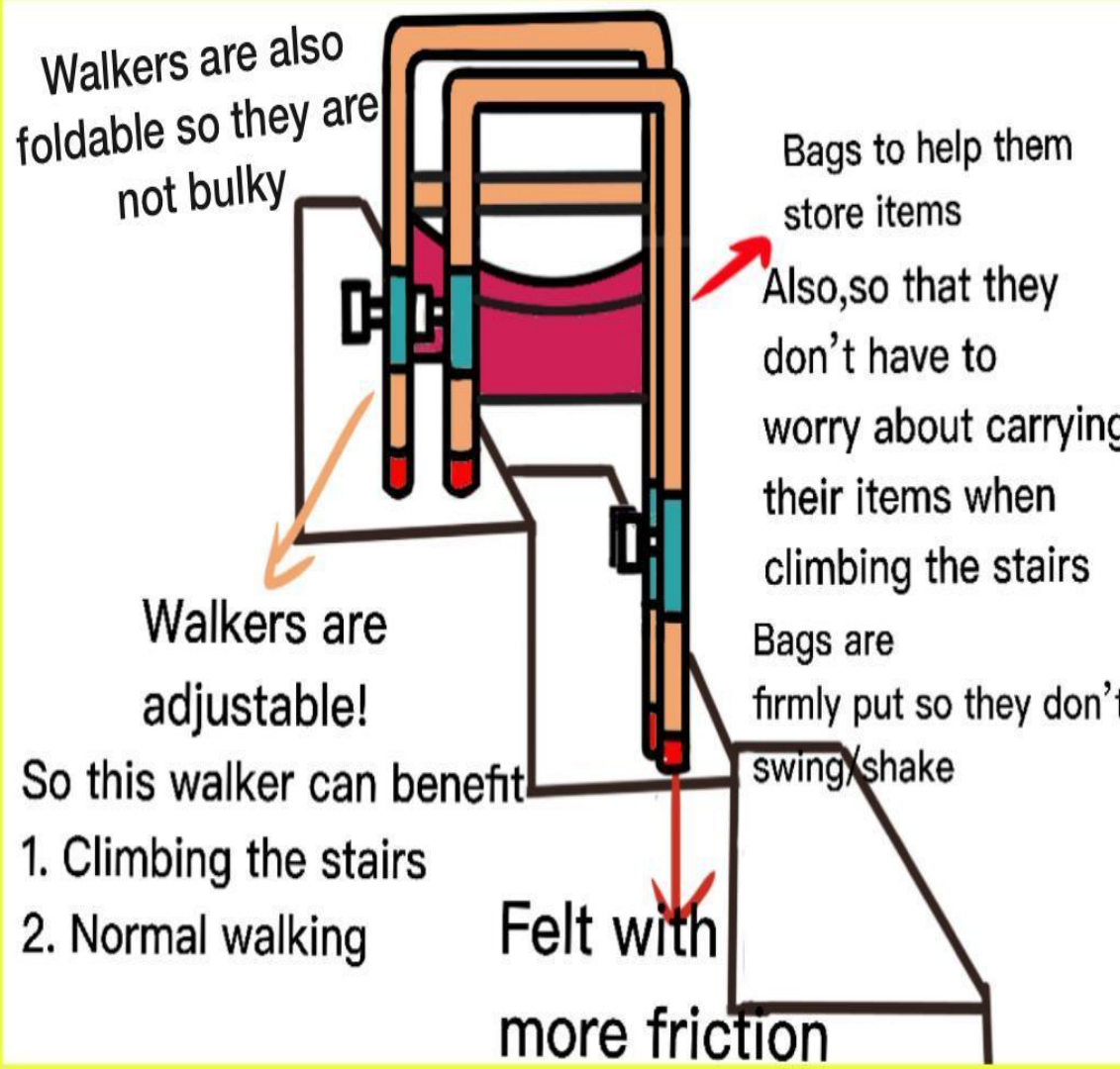


wheels that
can be adjusted to
roll on 4 wheels or
stop from falling

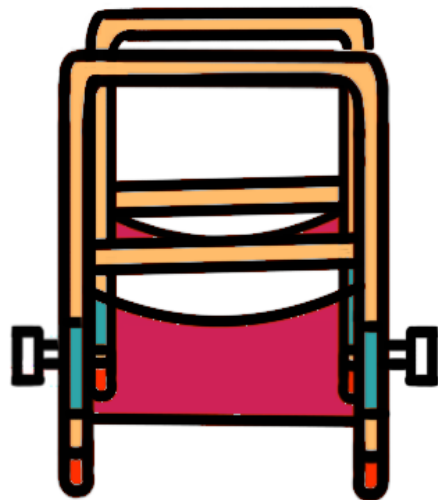
Our ideas! (xin jie)

Idea 1: adjustable walker

Adjustable walkers to help elderly climb stairs



Front View



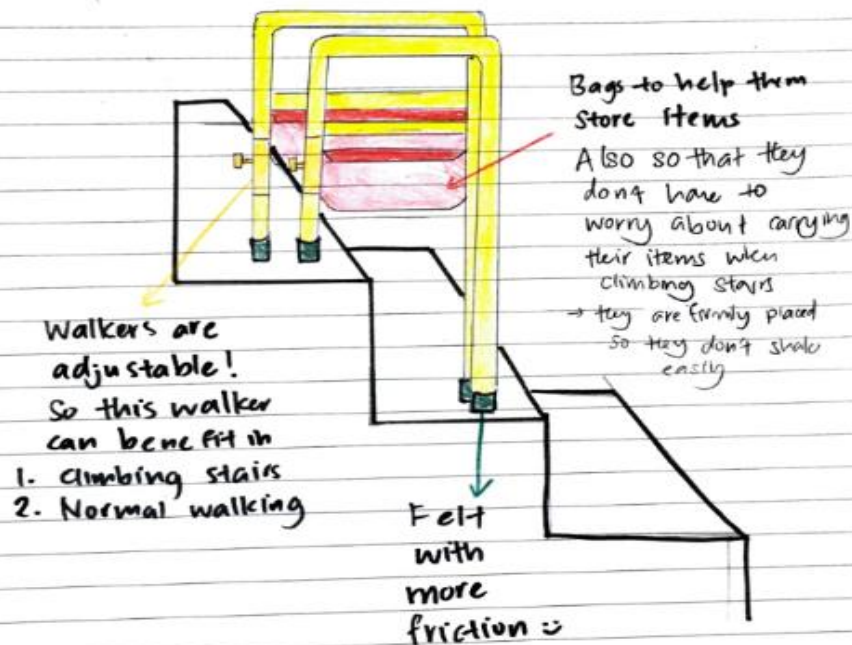
Xin Jie

Subject

Date

ADJUSTABLE WALKERS

to help climb staircases!

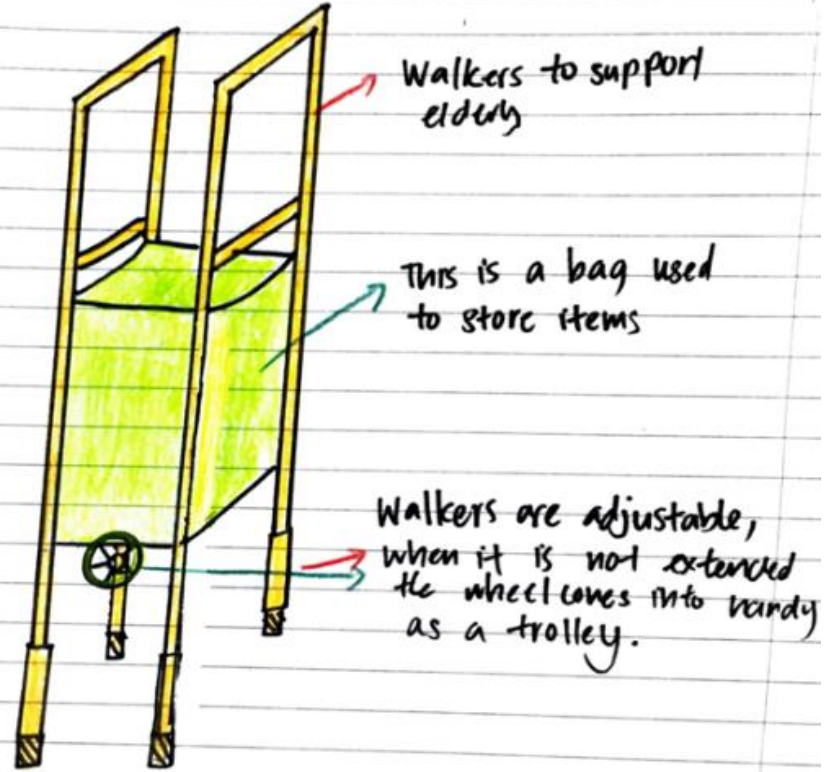


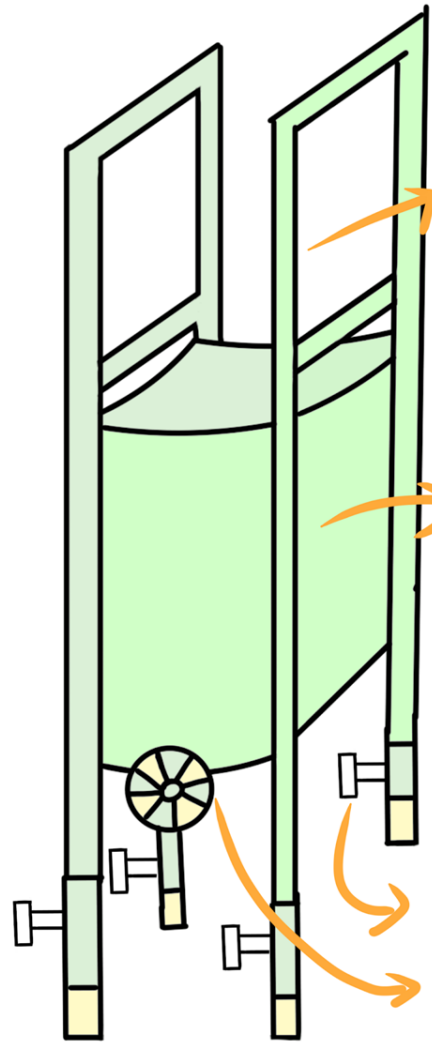
Our ideas! (xin jie)

Idea 2: walker-trolley

Has both the function
of a trolley and
walker

TROLLEY-WALKER! :)





Walkers to support elderly

This is bag to store items

Walkers are adjustable, when walkers are not extended, wheels can be used as a trolley



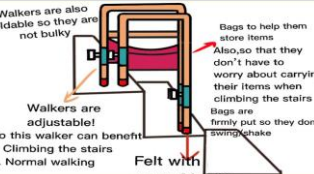
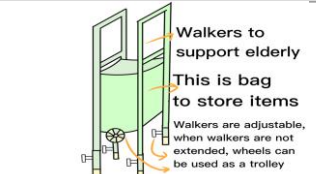
Criteria for our project
(What should and should not
be done)

We evaluated our designs based on multiple factors using a point system 1-4, 1 being the lowest and 4 being the highest.

Criteria

1. Is the design too big/bulky? (Size might be mobility aids, for instance, our design shouldn't be too big/ small, solution: a foldable item from big to small)
2. Is this design complicated? (The simpler the better, users might find the design confusing)
3. Is this design effective? (covering at least 2 or more scenarios to help users e.g. walking up the stairs and carrying heavy items)

criteria (1-4)

Criteria				
Ease of handling	3	2	3	2
Ease of use	3	3	4	3
Durability	3	3	4	3
Ease of manufacture	4	4	4	3
portability	3	3	4	1
total score	16	15	19	11

Design not chosen after criteria (lowest score)

Disadvantages:

After evaluating, we came to the conclusion that this design, idea 2, Xin Jie's is not suitable used to help aid mobility, as it is not only bulky in size, as it isn't foldable, but always will affect the mobility of users as when items are placed into the bag, the walkers will become heavier and thus become hard to move around with the walkers

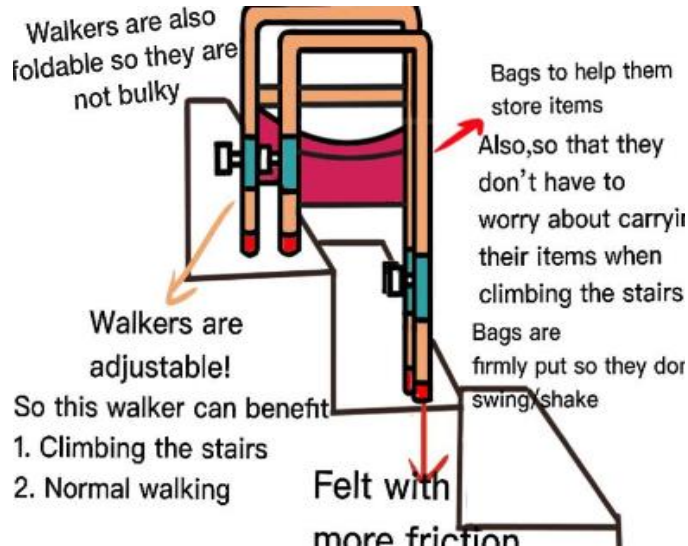
Design chosen after criteria (highest score)

Advantages:

We came to a conclusion that this design is the perfect size as it is foldable and solves our problem statement as it can carry items and can help the elderly climb up the stairs without falling. Additionally, it's very user-friendly as all you need to do is turn the knobs and you can adjust the walker

Product with highest score

Idea 1: foldable walkers



Product with lowest score

Idea 2: Trolley walker



Solution after Criteria judging

in order to achieve a simple, suitable size and an effective design that aids the mobility of users, we judged our designs using the criteria

We came to the conclusion that idea 1 (Xin Jie's adjustable walkers), as it's effective and it covers all factors!

- simple to use
- Adjustable legs and foldable it can decrease in size
- Helps in carrying heavy items (bag) and climbing up the stairs

End

— thank you! —
