

Module AC1: User Experience Design

Design and Development of ergonomic potato peelers

Aim

- The aim of this experiment is to produce two different types of potato peelers with optimised grips.
- The potato peeler should be usable by users with the most common (UK) dexterity impairments.

Two types of peeler

Type 1

Type 1 is a straight peeler where the blade is in line with the handle.



Type 2

Type 2 is a Y-shaped peeler featuring a blade perpendicular to the handle.



Osteoarthritis / Rheumatoid Arthritis

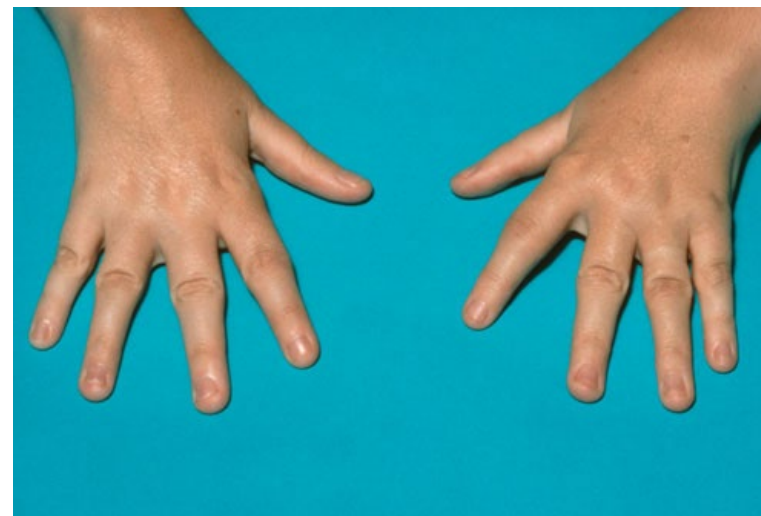
Osteoarthritis and Rheumatoid arthritis are two types of condition where use of the fingers and wrists are impaired. This is due to the weakening of the joints through inflammation resulting in limited grip strength, traverse and in certain cases pain upon movements.

Additional statistics:

- 8.5 million people are looking for treatment for osteoarthritis in the UK – NRShealthcare.co.uk
- 400,000 adults are affected by Rheumatoid Arthritis in the UK. - Arthritisresearchuk.org



gfinch.in



webmd.com

What impact does arthritis have on use of the hands?

Practical experiment: Simulate the lack of movement in the hands through the use of restraints and then compare to normal usage of the two different types of peeler.

Findings of disability experiment

Overall I didn't feel that the experiment achieved what it set out to do.

I think this because I didn't find it all that more difficult to manipulate the peelers. This is not inline with the fact that people with the aforementioned impairments do tend to find these types of tool more difficult to use.

The idea was to get a better understanding of the conditions and it didn't seem to achieve an accurate representation.



Comparing Type 1 to Type 2 peelers

Practical experimentation: comparing the two types of peeler to identify key advantages and disadvantages.

Findings

Type 1

- This was the harder to use given its more difficult to master technique.
- This peeler removed skin at a rate 15% to 25% slower than type 2.
- This peeler was relatively uncomfortable.

Type 2

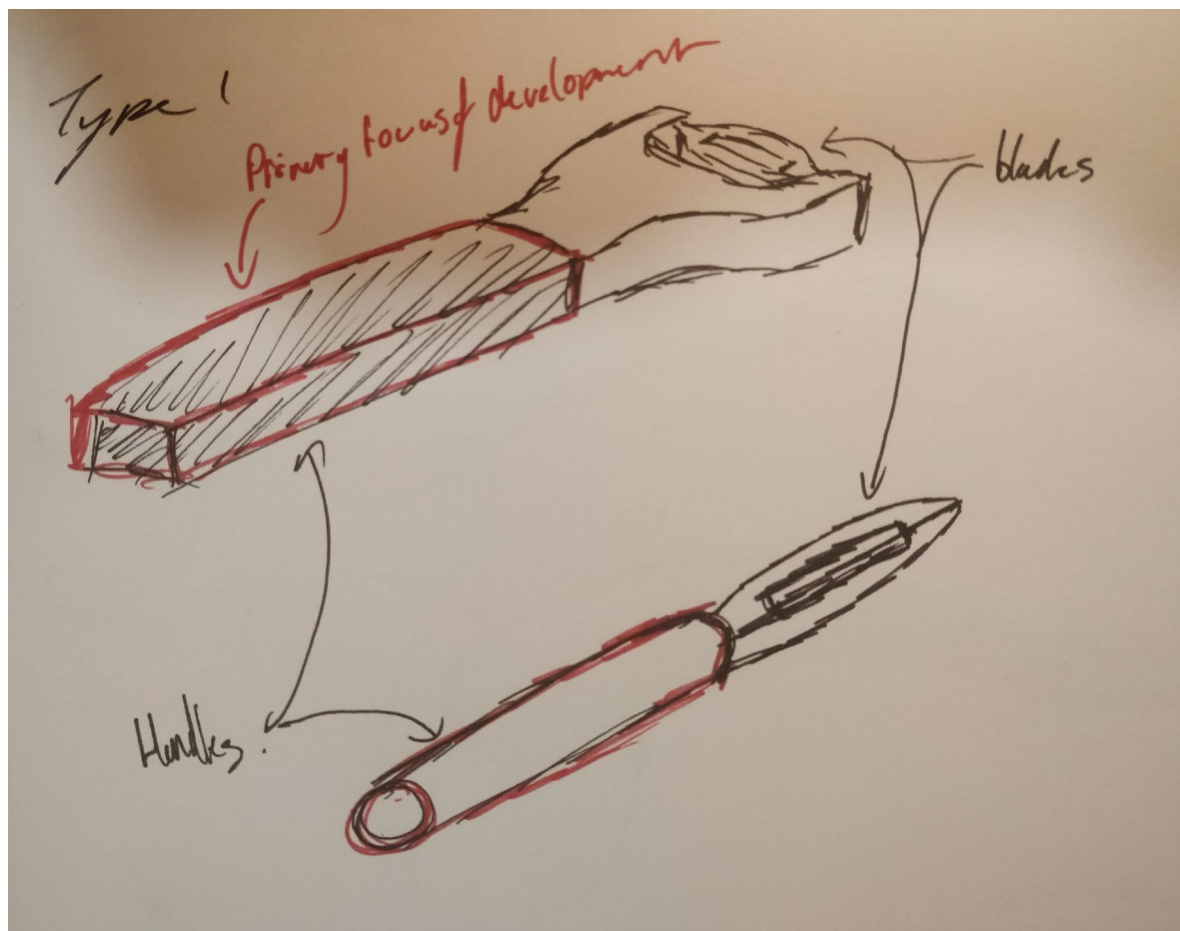
- This was the easier of the two to use.
- The technique you use to make the most of this type of peeler is more intuitive and makes the process of peeling the vegetable more efficient.
- This peeler is more able to remove larger areas of skin more quickly.

Comparison to restricted movement.

After completing the experiment without restrictions to movement in place. I applied tape in a particular way to limit movement of the fingers.

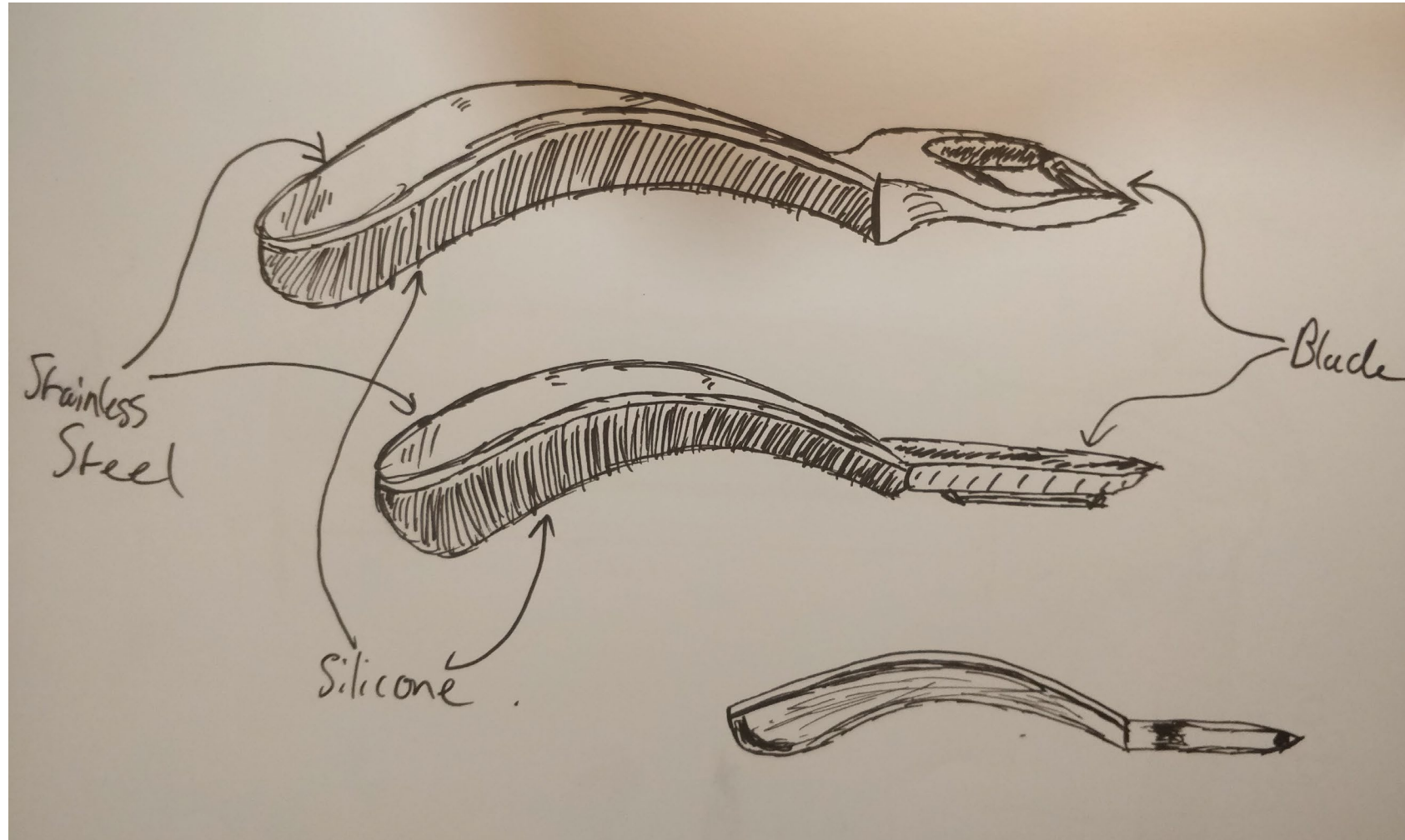


Initial Ideas



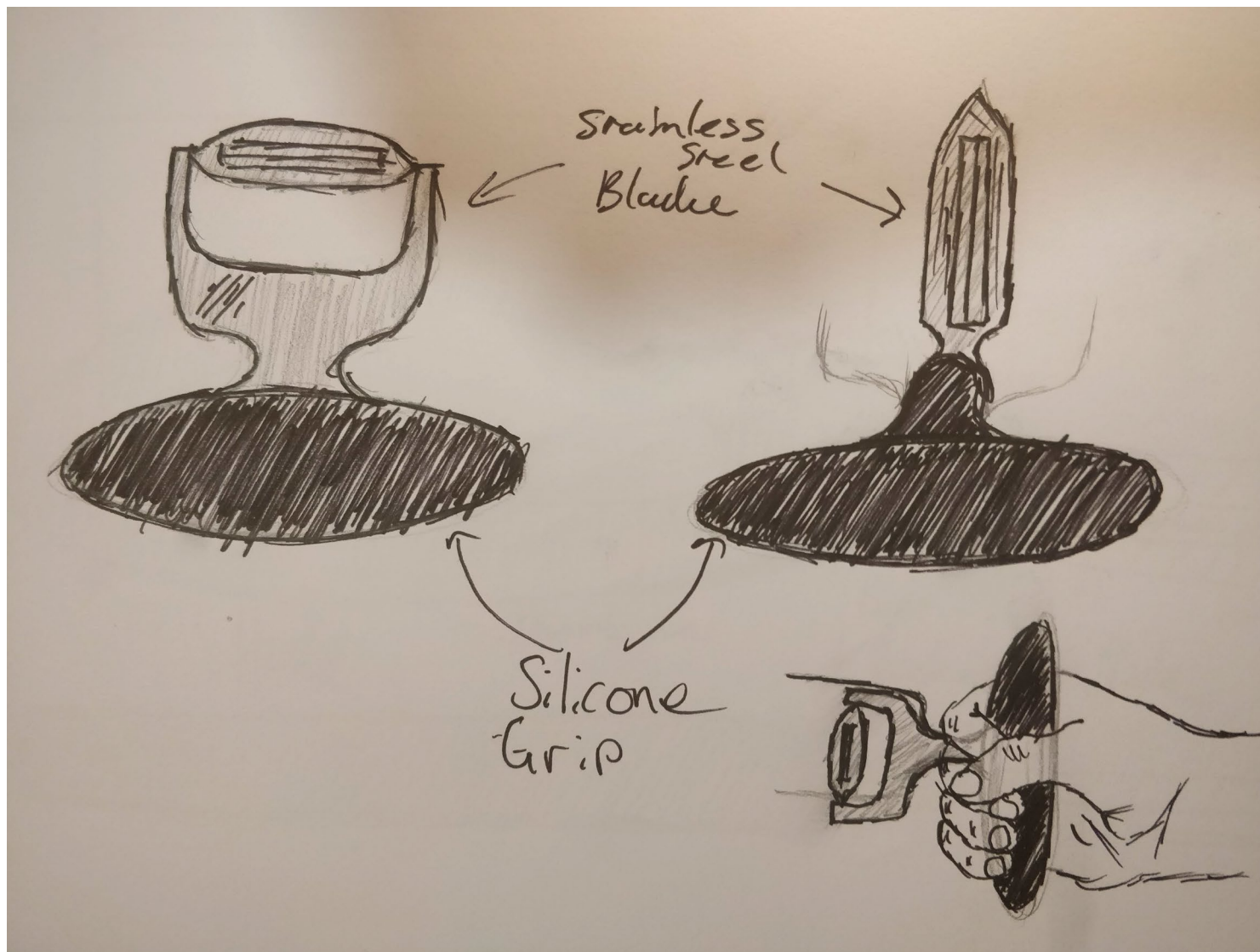
A selection of ideas which didn't make it to the development and research phase. These ideas may be used for further development of the final ideas.

Idea 1



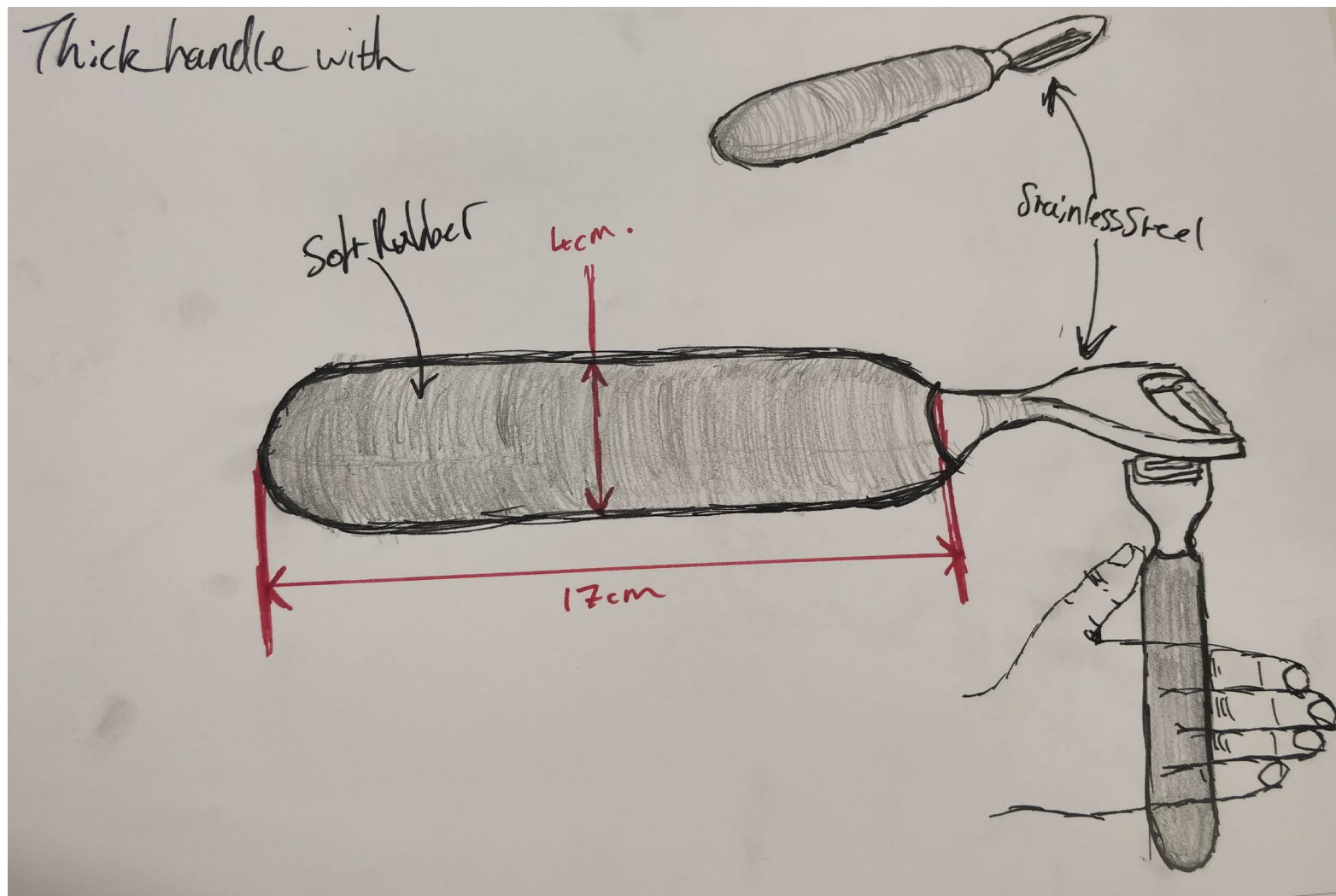
This idea is heavily influenced by the existing type 2 peeler. It features the same basic shape but with an exaggerated curve in the handle. The theory is that this would help with ergonomics with more of a vertical grip feel.

Idea 2



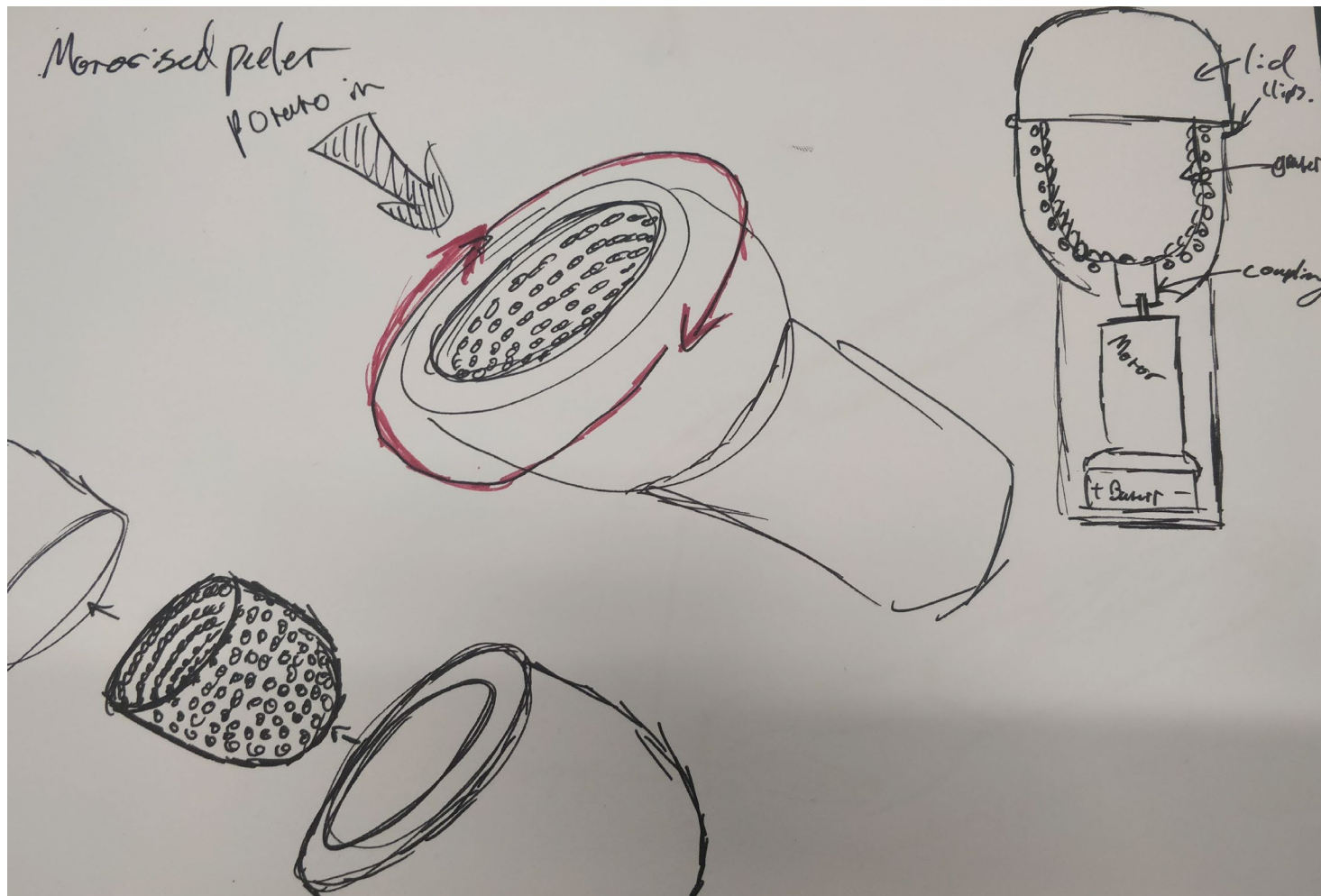
This type 1 design features a cork screw style handle with a silicone grip. This is an experimental design based on observations of the ergonomics of cork screws the theory to test here is if this kind of handle also works well in this application

Idea 3



This idea intends to make use of softer materials to achieve a better grip and more comfortable feel. This would also theoretically provide users with hand impairments better grip with a wider handle and adaptive grip.

Idea 4



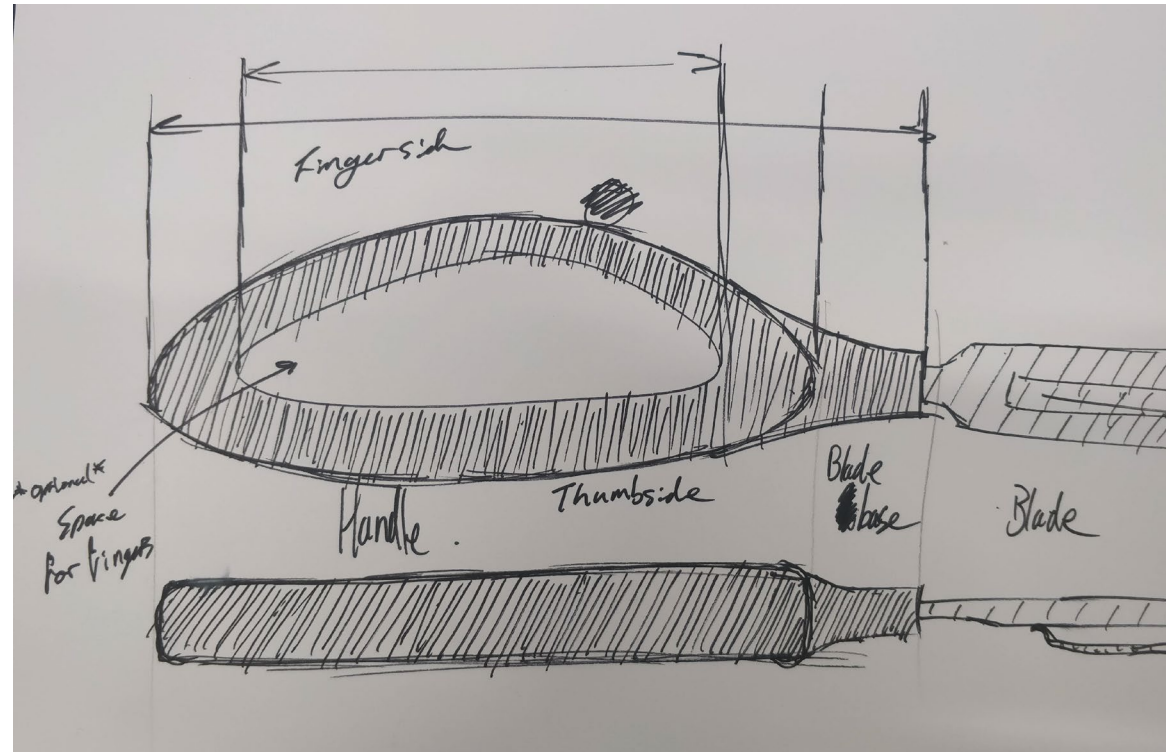
I investigated a motorised model to attempt to find alternative types of peeler. This particular model is designed to remove all physical movement and therefore stress. This would be especially helpful for arthritic users and be an interesting alternative for average users.

Final concepts

Overlook of the two concepts taken forward for testing and comparison against the existing products.

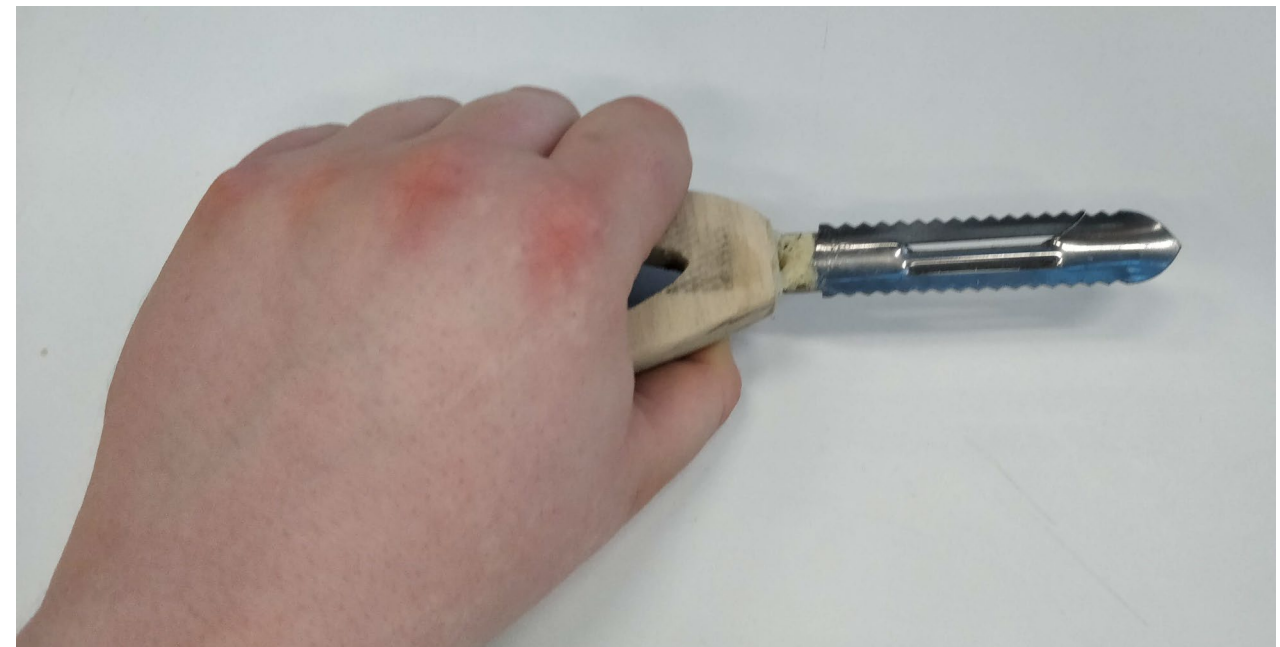


Final Concept type 1

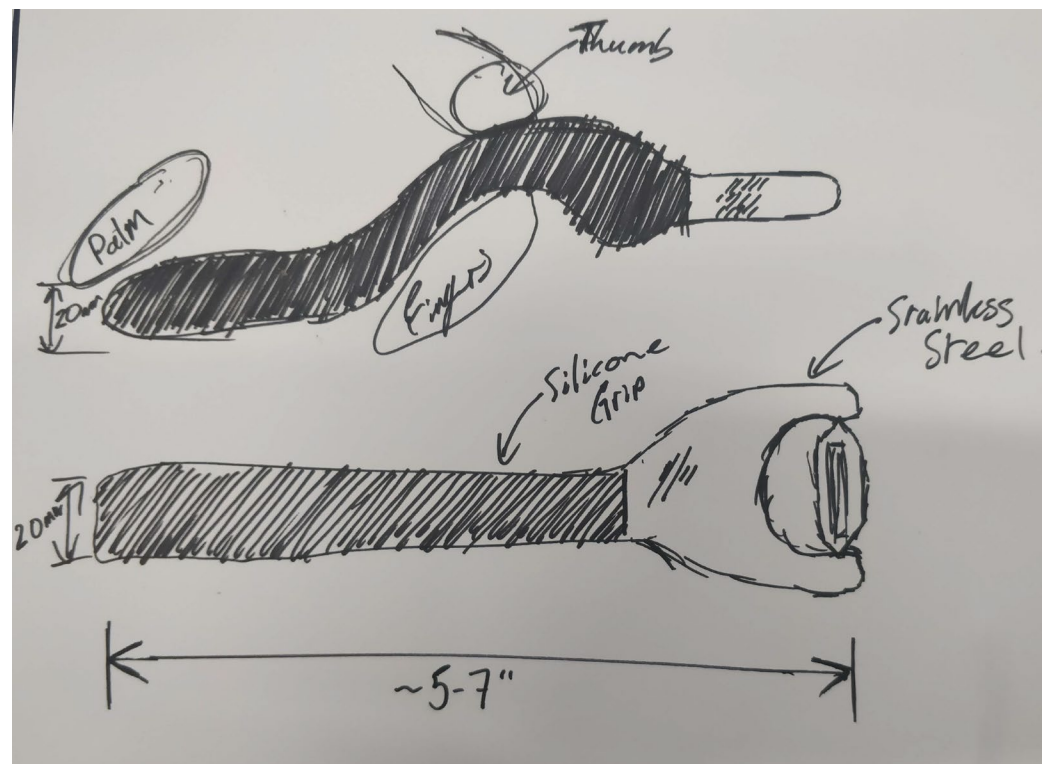


Final Concept type 1

This design attempts to make this type of peeler easier to use by removing the need for the intricate method necessary to get the most out of the other existing design. The design also uses a smaller built-in handle which allows the user to use the traditional method if they so choose.



Final Concept type 2



Final Concept type 2

The idea behind this concept was to make a heavily ergonomically centred handle. Since the method is easy to master I didn't need to take the same precautions as the type 1 concept. The design is supposed to enable as much grip to the user as possible with exaggerated ergonomic features.

