

# Zip Assist

Zipper Assistance Devices for  
Individuals with Fine Motor  
Disabilities

## Design Statement

We seek to design for our stakeholders, who are individuals who've lost **fine motor controls in their hands**. This design focusses on enhancing their lived experience by improving their **ability to use common zippers**. It focuses on assisting those with loss of grip strength and low dexterity needed to operate zippers.

## Objectives



Improve on **time taken** by stakeholders to use the zipper

Enable stakeholders to feel **accomplished and socially confident**



Not require **significant training or specialized equipment**

Be **affordable and accessible** to all stakeholders



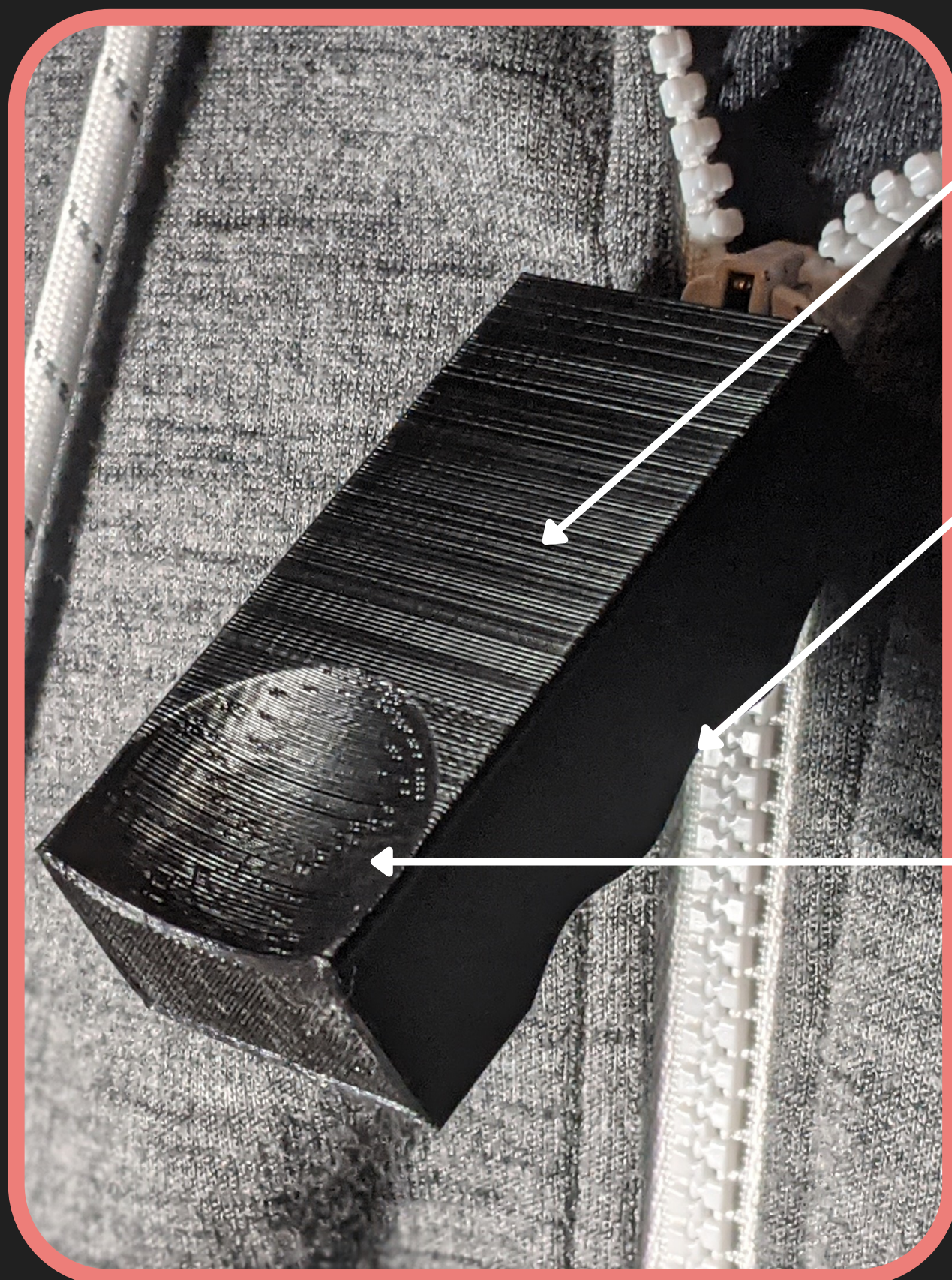
## Design Philosophy

The opportunity was broken into two key functions to design for: Grip and Alignment.

1. **Grip**: Increasing the size of grip targets for users to grip the zipper to move it through the zipper tape
2. **Alignment**: Helping users align the two sides of the jacket during the initial alignment

Tackling these problems separately led to **modular designs** that were highly specific and targeted, leading to **higher efficacy** than reference designs in testing.

## Design for Improved Grip - Codename "3D Printed"



### Potential For Aesthetic Pleasure

Various colours and textures can be applied to this design to make it aesthetically pleasing. The general shape can also be changed to suit a specific user's desires.

### Fingerpads

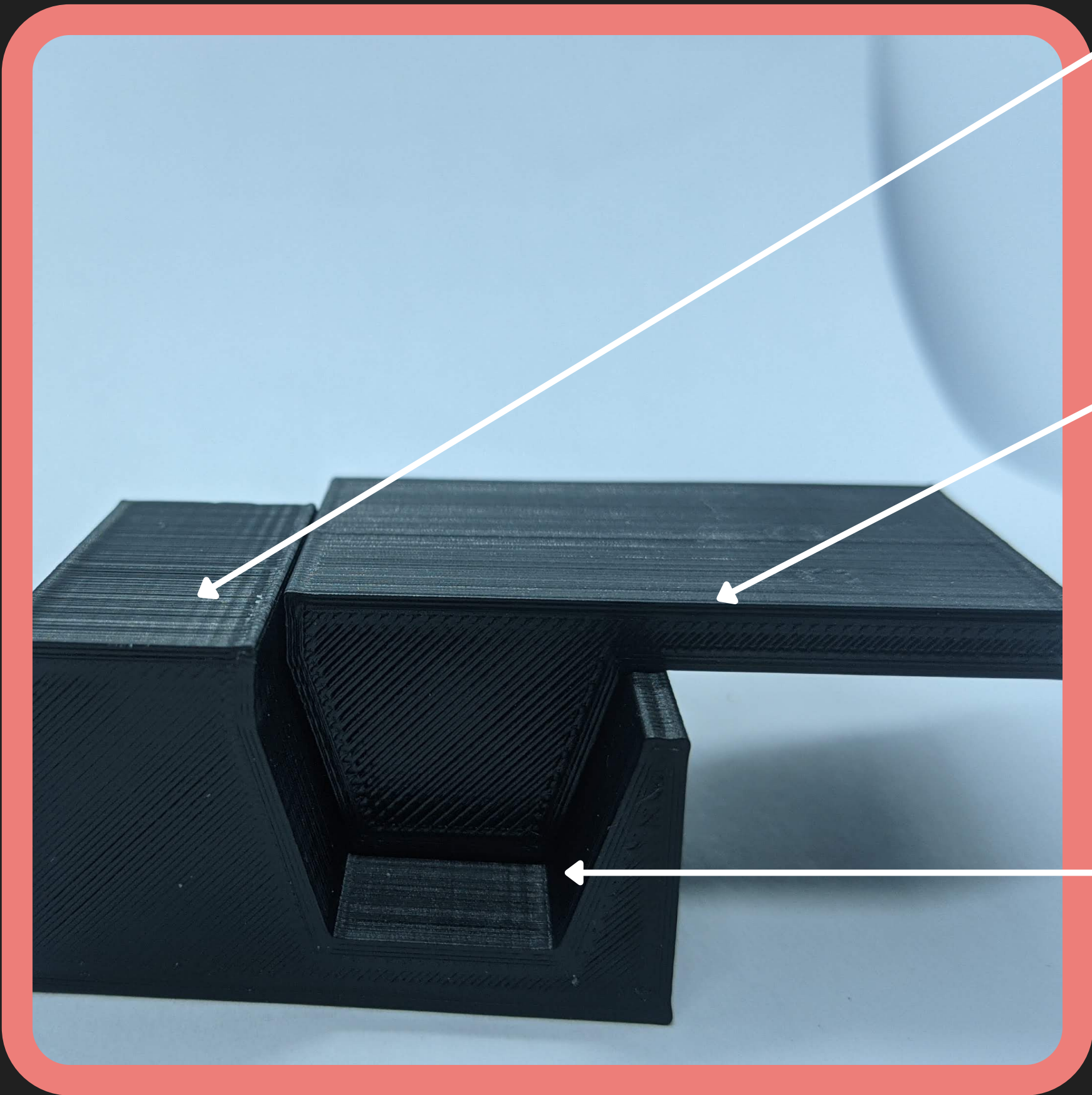
The curves on the other side allow a resting place for the other fingers, allowing the user to hold onto the grip with their full hands. Combined with the grip pads, it makes the touch targets for the user far larger.

### Ergonomic Thumb Grip

The grip was designed, shaped and sized for a sample group of stakeholders from SickKids. Average finger sizes were sourced from research. It is indented to naturally induce the Palmar grip, which is one of the lowest dexterity grips.



# Design for Improved Alignment- Codename "Simplign"



## Retainer Box Attachment Side

This half is attached to the underside of the tape below the retainer box and acts as a target for the zipper side to slot into. It has large flat surfaces, reducing the dexterity needed to align the zipper.

## Zipper Attachment Side

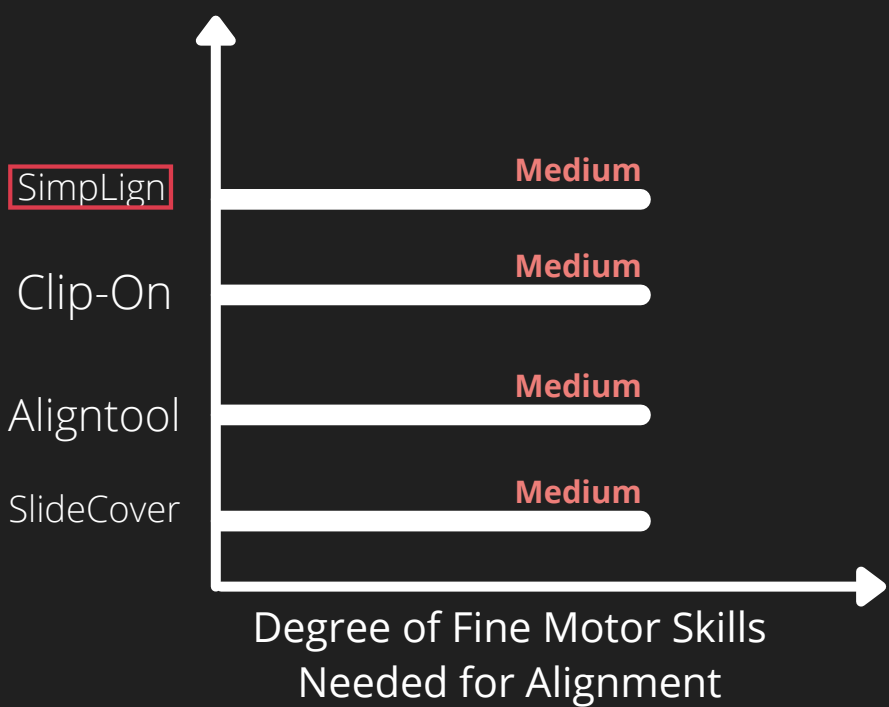
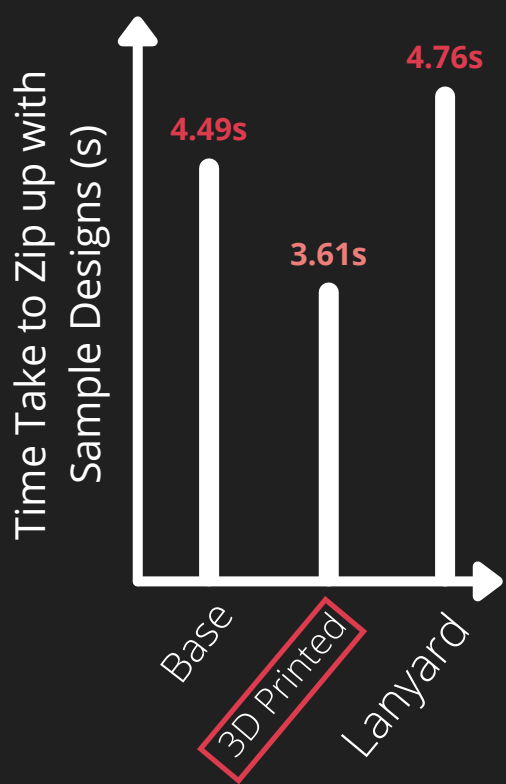
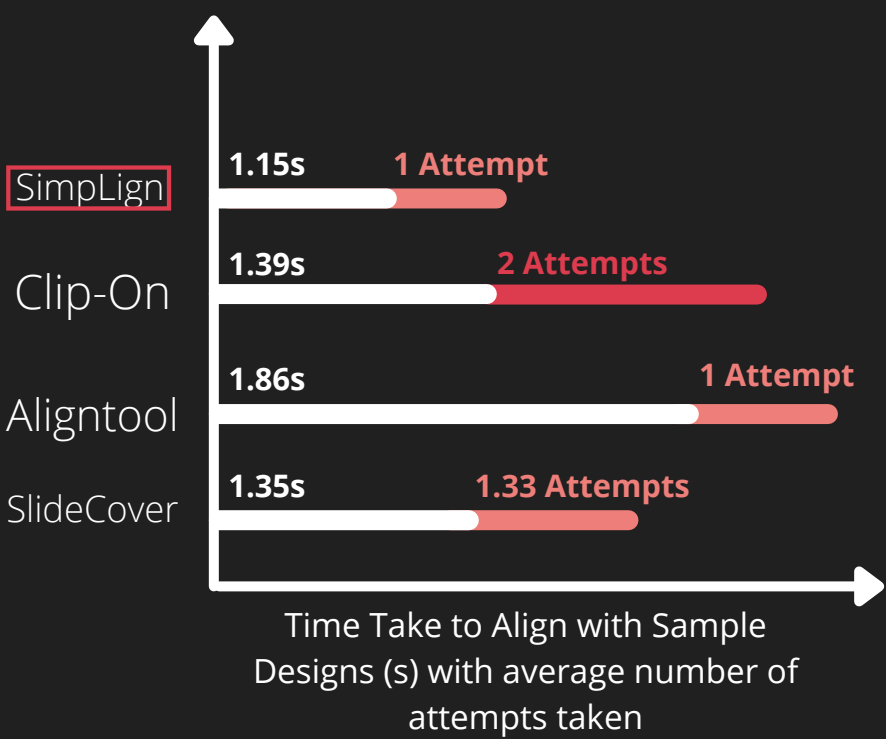
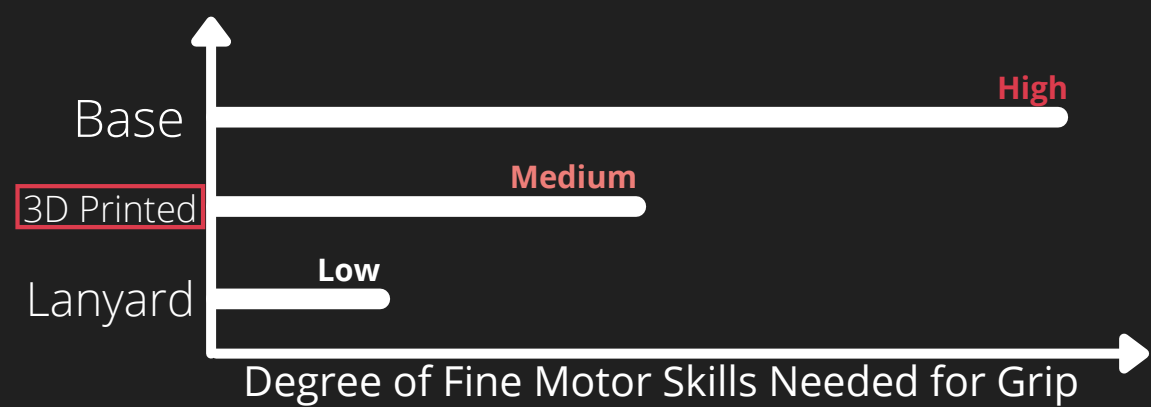
This side goes below the zipper on the zipper side of the tap and guides itself into the retainer box side while guiding the zipper into the retainer box. Combined with the other half, the attachment sides reduced a 3D alignment problem to a 2D problem.

## Insertion Sites

These trapezoidal sites were chosen for its simplicity of manufacturing and alignment characteristics from other shapes such as squares and circles.

## Validation Testing

Chosen designs are outlined in red



| Design     | Design Agnostic? | Grip Design | Grip Surface Area (cm squared) |
|------------|------------------|-------------|--------------------------------|
| 3D Printed | ✓                | Base        | 4.8                            |
| Simplign   | ✓                | 3D Printed  | 28.9                           |
|            |                  | Lanyard     | 46.9                           |

## Improvements

- Determine Simplign clothing fastening mechanism
- Adjust position of finger pads on the Simplign design

## Next Steps

- Refine ergonomics both components of the final design through testing
- Determine aesthetics of the ZipGrip handle based on surveys of our stakeholders