



# ELECTRIC REPLACEABLE BRUSH - “ERB”

## Community

At Basecamp climbing centre, boulder climbers rely on powdered chalk to increase friction. However, excessive buildup clogs the micropores of holds, leading to reduced surface texture required for a secure grip.

## Opportunity

Our aim is to develop an efficient, low-strain solution for cleaning chalk off the most frequently used holds at Basecamp.

Data for 10 Sloper Holds

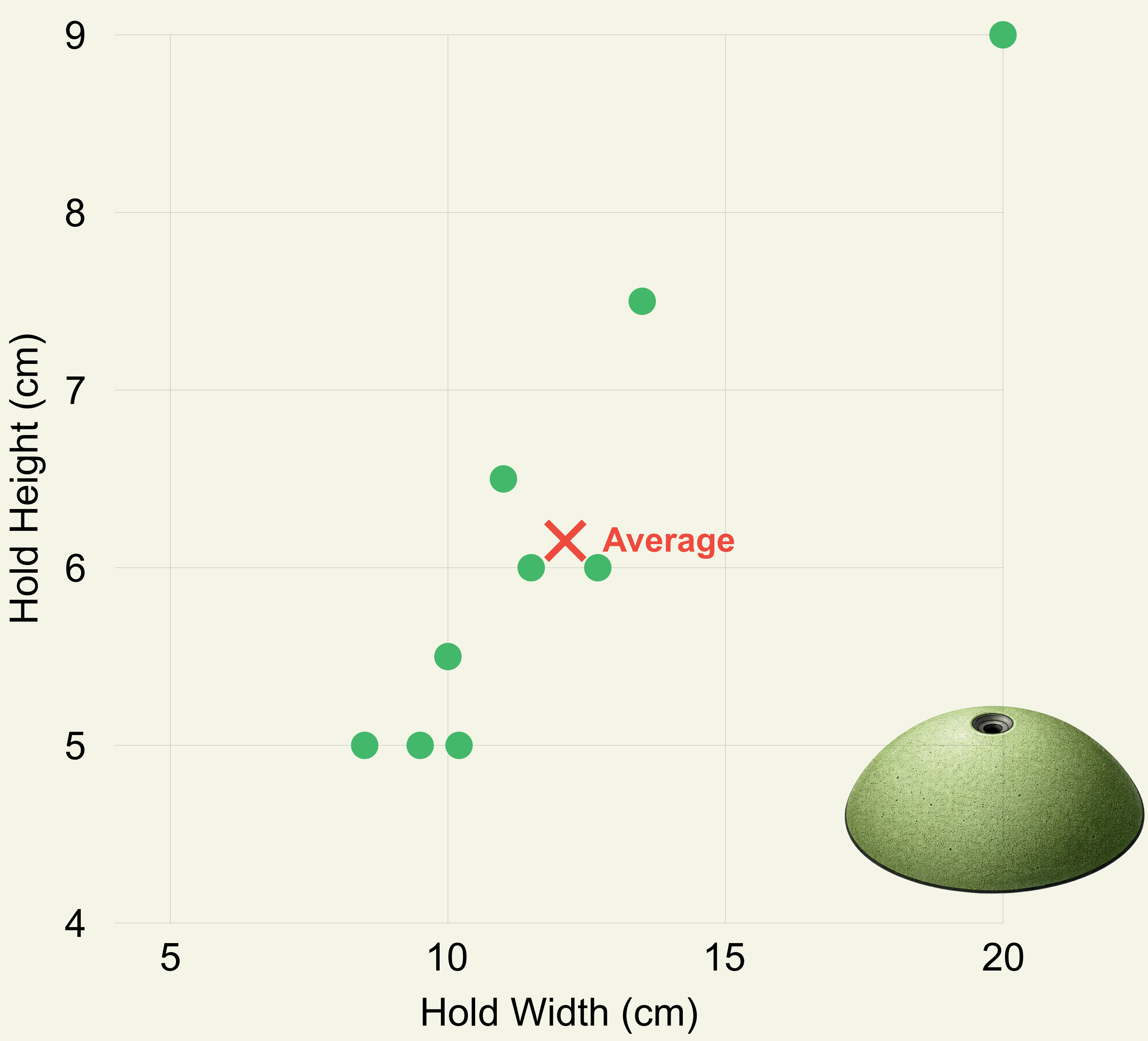
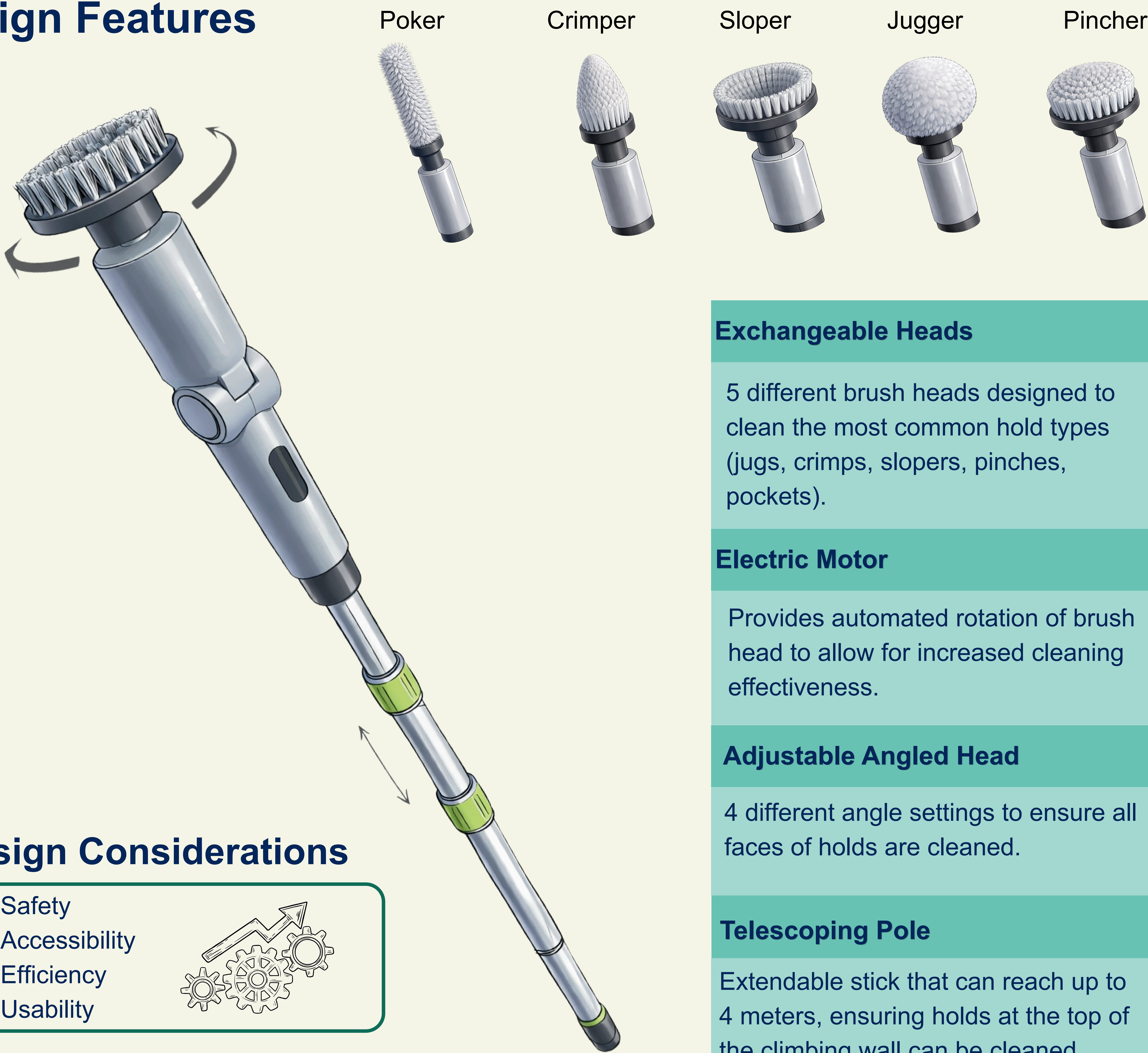


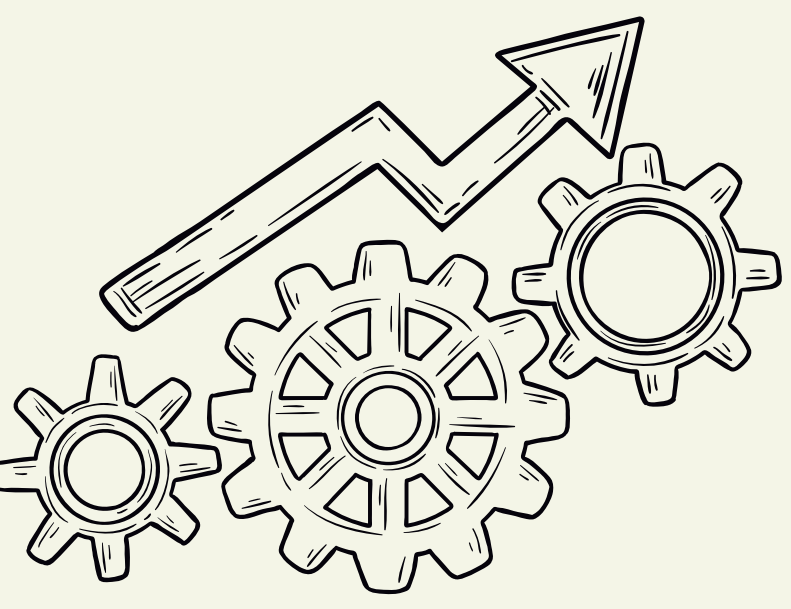
Figure 1.0: Width and height data for 10 sloper type holds, with an average width of 11.8 cm and height of 6.2 cm.

## Design Features



## Design Considerations

1. Safety
2. Accessibility
3. Efficiency
4. Usability



### Exchangeable Heads

5 different brush heads designed to clean the most common hold types (jugs, crimps, slopers, pinches, pockets).

### Electric Motor

Provides automated rotation of brush head to allow for increased cleaning effectiveness.

### Adjustable Angled Head

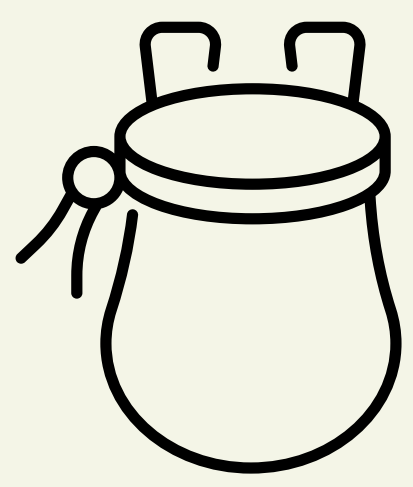
4 different angle settings to ensure all faces of holds are cleaned.

### Telescoping Pole

Extendable stick that can reach up to 4 meters, ensuring holds at the top of the climbing wall can be cleaned.

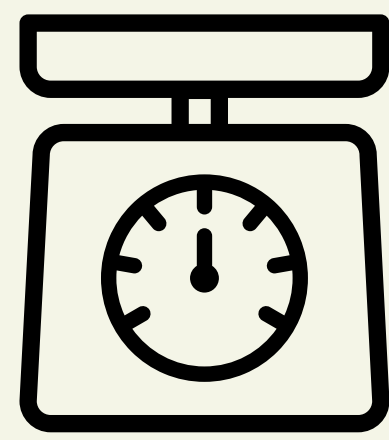
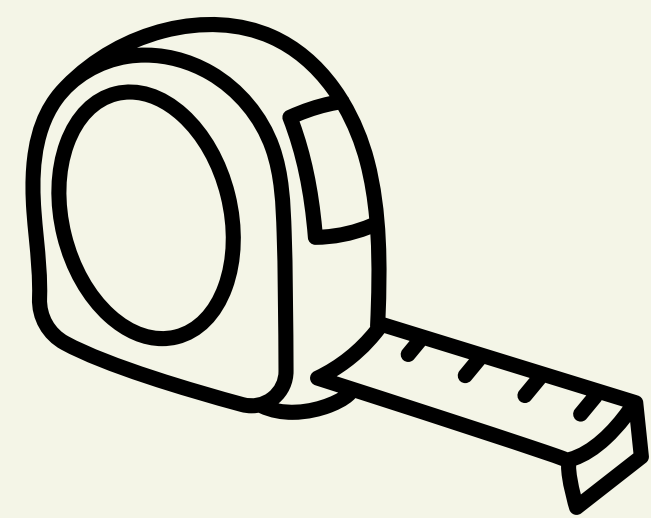
## Specifications

1. The device removes > 90% of the chalk on the hold



2. Cleaning takes under 5 seconds, setup takes under 10 seconds

3. The device reaches 4 meters high



4. The device weighs less than 2.3 kg in total weight

5. The solution does not disrupt the social environment of the gym



## Next Steps

- Develop a fully functional prototype of the device
- Test a range of brush head designs to determine the most effective configurations
- Reduce the number of interchangeable components while maintaining performance
- Conduct user testing in a real gym environment to validate effectiveness and usability