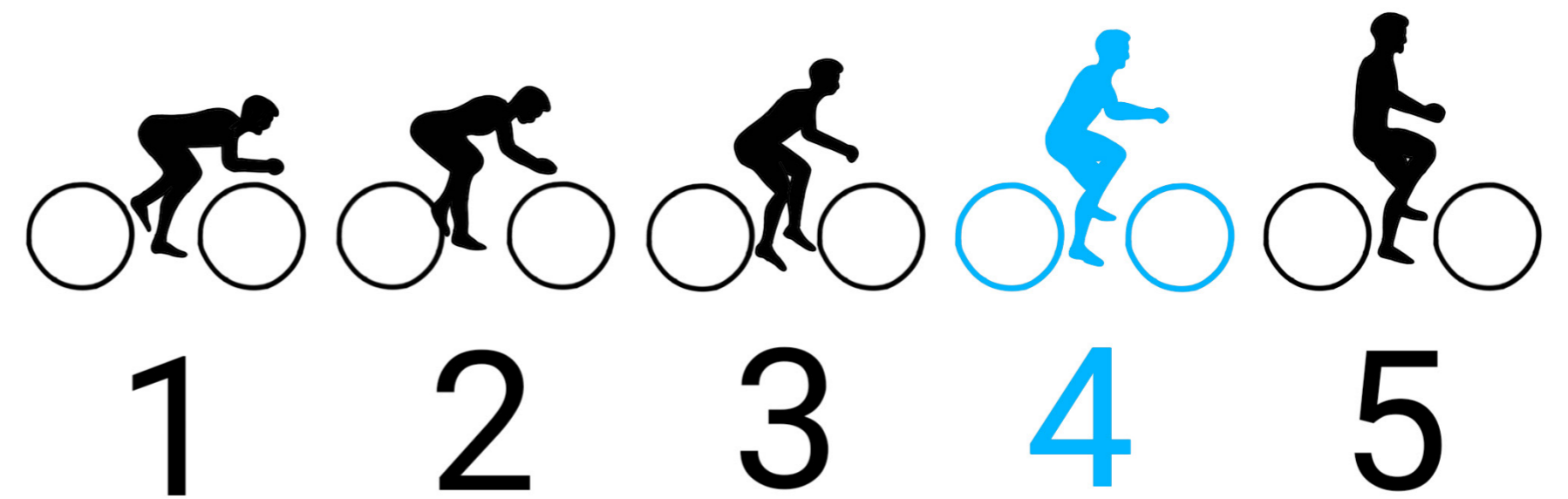


# AN ERGONOMIC APPROACH TO THE DESIGN OF BICYCLE HANDLEBAR GRIPS

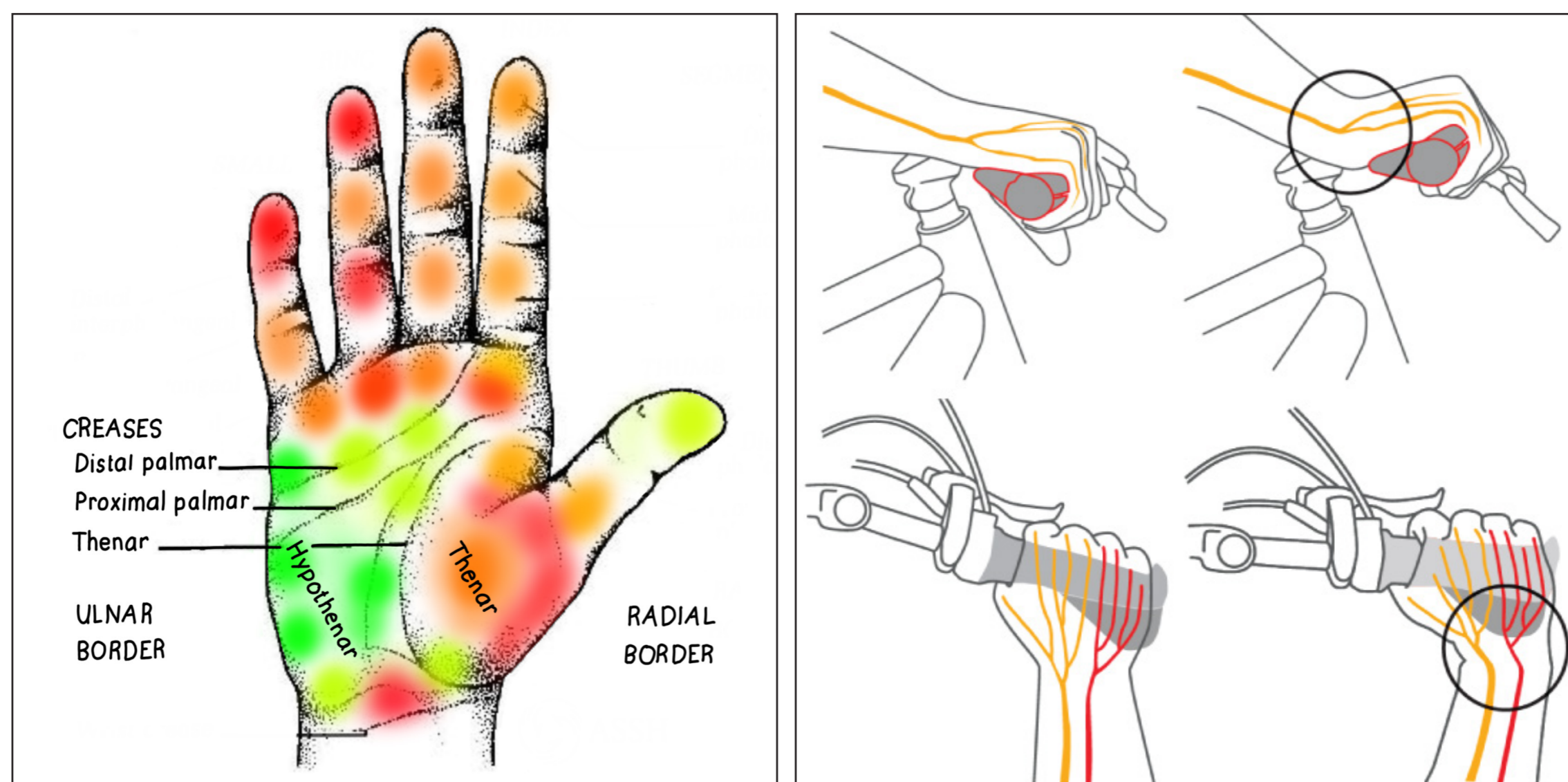
The client for this project, Widek, wants to improve the experience of cycling on city (e-)bikes (category 4) by increasing the feeling of comfort. This project includes research to the existing problems regarding bicycle handlebar grips and the development of a concept design with focus on the two most pressing of those problems being pressure peaks and incorrect wrist positions.



## PRESSURE PEAKS

The human hand can be divided into regions with different pressure discomfort threshold values, indicating the pressure limit above which the user experiences discomfort.

Pressure peaks are caused by incorrect design, mounting or use of the bicycle handlebar grips in combination with high pressure for an extended time.



## INCORRECT WRIST POSITION

A common problem during cycling is the sagging of wrists due to the lack of support or adoption of an incorrect handlebar angle.

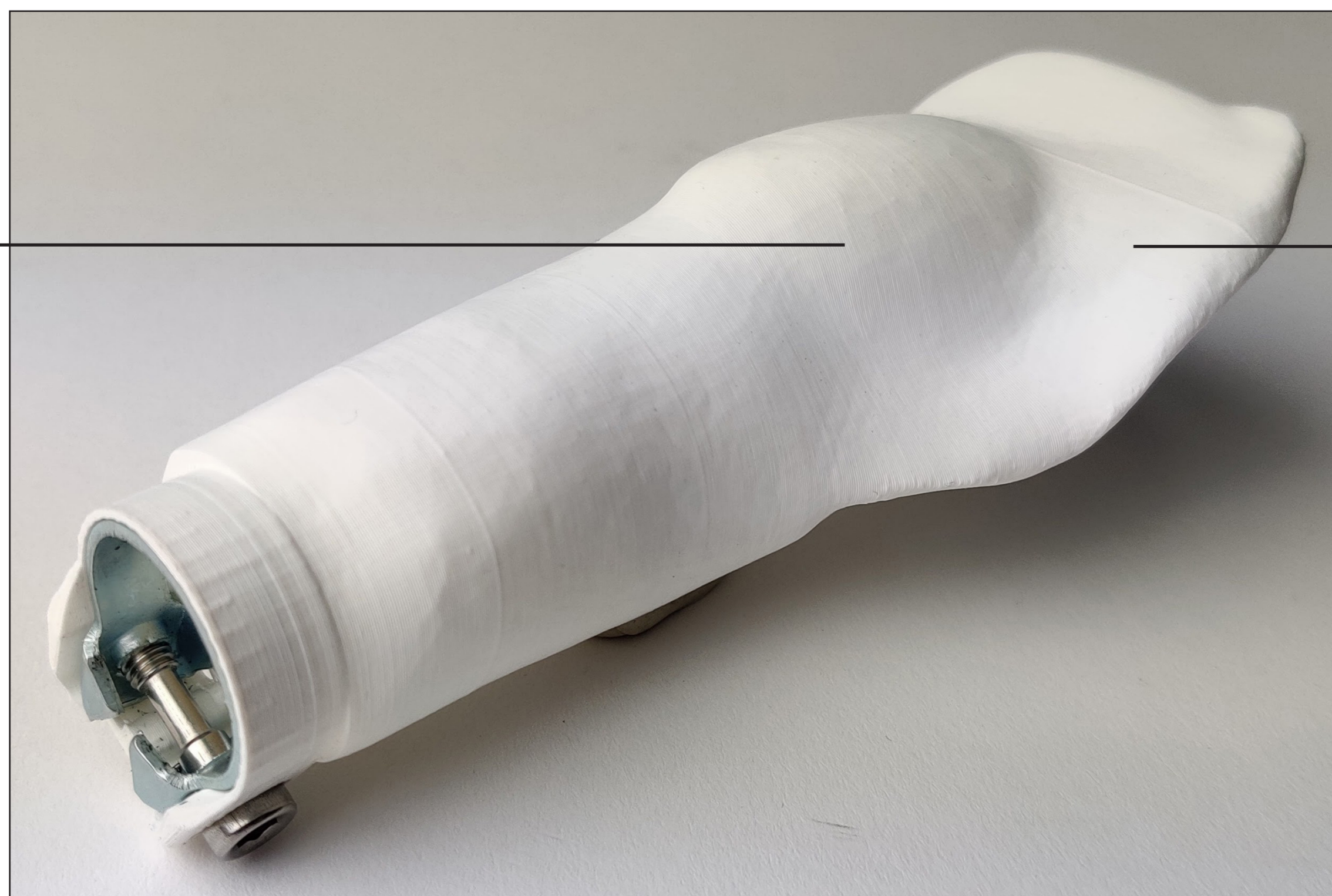
Any position that differs much from the neutral posture increases the chance of throttling circulation to, in and from the hand, and can cause pain or numbness.

## BUMP

Increases surface area between bicycle handlebar grip and hand by filling the cavity between the thenar and hypothenar regions (high pressure discomfort threshold).

Increased height diverts pressure away from low pressure discomfort threshold regions.

Increases stability by counteracting the contact force between the hypothenar region and the wing.



## WING

Increases surface area between bicycle handlebar grip and hypothenar region of the hand (high pressure discomfort threshold).

Prevents sagging of the wrist and ensures a neutral wrist position.

Is a trusted and recognisable shape that is associated with increased comfort.

Diverts attention from the bump, making it less outstanding.



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An ergonomic approach to the design of bicycle handlebar grips  
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Integrated Product Design

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