Praxis I Design Summary: Shoulder Straps

UNIVERSITY OF TORONTO

Helping EngScis keep a better back posture

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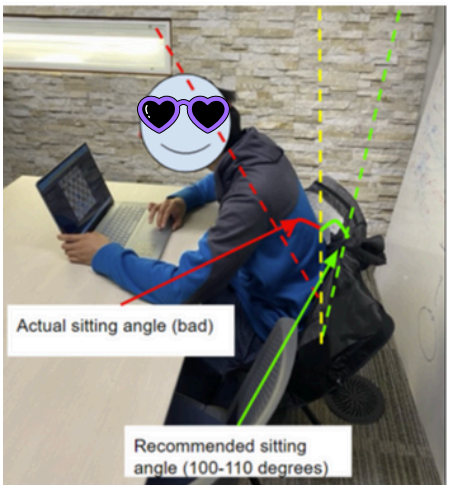
Opportunity

Correcting back posture of EngSci first year students with a comfortable and minimally visible design

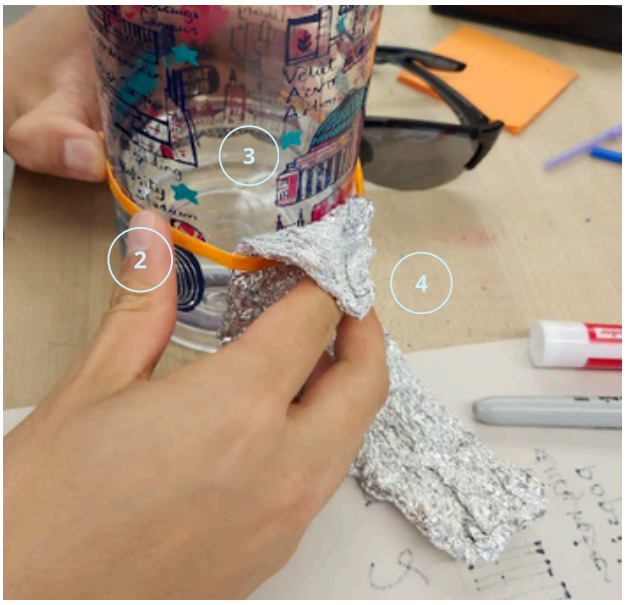


Designing For:

- Fixing back posture
- Safety
- Portability
- Durability
- Aesthetics

Our Proposed Design

Our final proposed design was influenced by shoulder straps. It solves the problem by forcing the user to sit up in a chair.



1. Clips
2. Straps
3. Backrest
4. User

Design Features

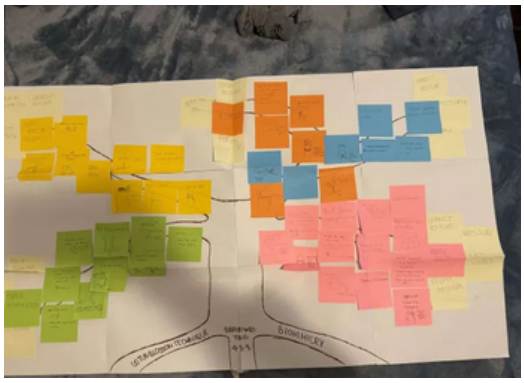
1 Clips

The clips can be adjusted throughout the length of the rope and are for quick release.

2 Straps

The straps have a larger SA to increase the comfort of the user and reduce their back mobility.

CTMFs



Diverging Tree Using the Biomimicry, Brainwriting 6-3-5, Random Input and Lotus Blossom Technique

- *Pugh Chart:* Ranked designs against each other by comparing key requirements.
- *Brainwriting:* Used to quickly explore the design space.
- *Biomimicry:* Used to explore a broader design space by making connections to animals (i.e. giraffes).
- *Perry Model:* Combined and critiqued individual ideas to become an integrated authority.

Verification and Validation

- *Testing posture correction:* Wore each prototype to determine it's effectiveness in fixing back posture qualitatively (see picture to the right)
- *Testing for safety:* Used safety standards to inform safe design.
- *Testing for durability:* Dropped prototypes from 3 ft to test durability

Next steps

Further testing with higher fidelity prototypes is required to validate our design choices. As well, we would like to test with our stakeholders, and reframe our design and associated requirements from stakeholder feedback.

Skills Learned

- Communication
- How to explore the design space
- Acknowledging bias

Acknowledgments

We would like to thank the best Praxis I TAs, Ben and Joy. We would also like to thank the Engcis that agreed to be interviewed and in our photos.