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Writers (Un)Block Grip Expander

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Client Educator Occupational Profile

- 75 Years old
- Advocate, entrepreneur, and **author** – roles that require the client to write!
- Client has reduced finger extension and thenar and hypothenar wasting resulting in a **weakened grasp**

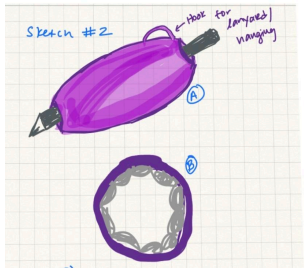
Client's perception on writing performance:
Importance: 8 Performance: 3.5 Satisfaction: 3.5

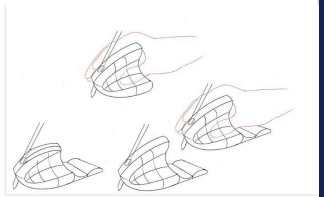
Client's occupational needs/ performance challenges and potential of device to improve function/ performance

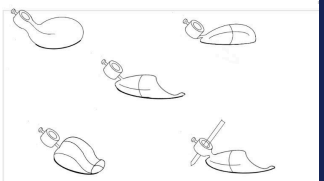
Client's occupational needs/performance challenge

- Weakened grasp prevents client from grasping pen for prolonged periods of time
- Client prefers to write by hand and writes frequently
- Client created DIY grip for his pen for wider grip

INITIAL SKETCHES:



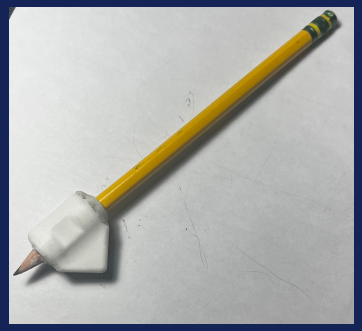


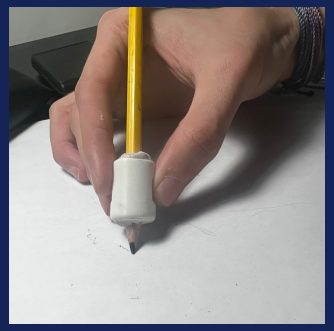


Client Educators Prototype:

Prototype and Final Design

Protoype 1





Feedback from client: It was too narrow, can't fit multiple pens and didn't like the fact it touched the page.

Final Design

"Feels great"
"Much better than last one"
"I can sign my new book using it!"

FUTURE CONSIDERATIONS: Testing usabilty of grip for other occupations that require a similar grip. For example: holding a utensil or a toothbrush.

Validation

- Wide cylindrical handles allow for more distal phalange use (Mühldorfer-Fodor et. al, 2017).
- Wider grips also reduce general load on hand (Kadam et. Al, 2019)
- Different sizes should be tested to find an individual's best fit (Mühldorfer-Fodor et. al, 2017).

The device increased the diameter of writing device and used trial and error testing to fit the client giving it validity.

Universal Design Principles

Equitable Use: while custom to the client, it could be used by others with a similar grip.

Flexibility in Use: the device is adjustable to use with different writing utensils – and possibly other utensils that fit the design and grip.

Low physical effort: the design minimized sustained physical effort. The ability to adjust the size of the device also requires minimal effort.

References

Kadam, S., Kanase, S., Bathia, K., & Patil, C. (2019). Effectiveness of Training with Different Sizes of Pen on Writing Capacity in School Going Children. *Website: www. ijpot. com*, *13*(3), 146. https://doi.org/10.5958/0973-5674.2019.00106.0

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Mühldorfer-Fodor, M., Ziegler, S., Harms, C., Neumann, J., Kundt, G., Mittlmeier, T., & Prommersberger, K. J. (2017). Load distribution of the hand during cylinder grip analyzed by manugraphy. *Journal of Hand Therapy*, *30*(4), 529-537. https://doi.org/10.1016/j.jht.2016.10.009

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