SYMBIONIC HAND ORTHOSIS FOR PEOPLE WITH DUCHENNE MUSCULAR DYSTROPHY

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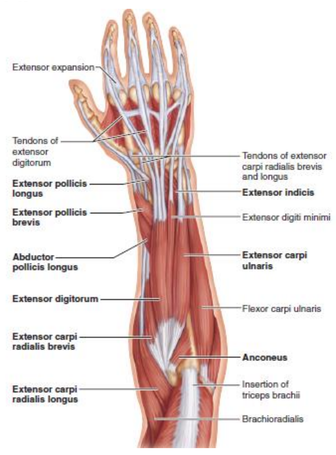
Introduction

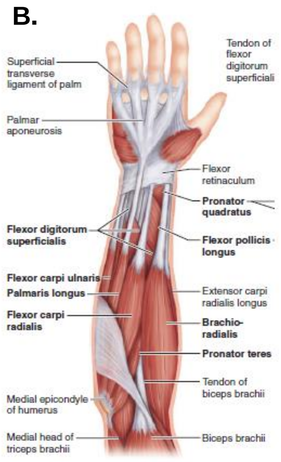
Unrestricted functioning of the human **arm** and **hand** is essential for **autonomy** and personal **quality of life!**

DMD is an X-linked disorder affecting 1 in 3500-6000 boys. It causes **muscle degeneration** and decreased life expectancy, but recent pharmaceutical advances have increased this to over 35 years old. The need of an **active** and **adaptive support** for people with DMD is imminent in order to reduce caregiver workload, **improve the quality of life** and increase **independence**.

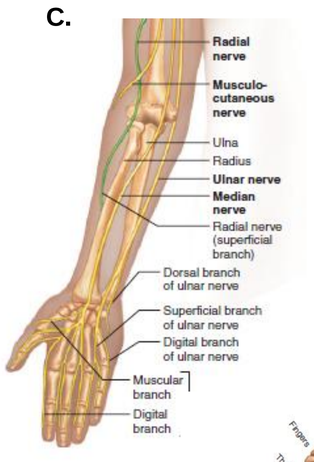
A.



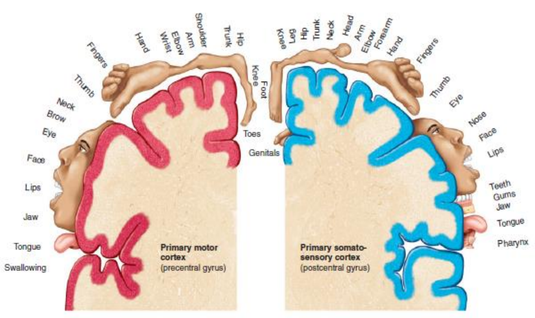
B.



C.



Muscles on **A.** the posterior and **B.** anterior of the forearm acting on the wrist and the fingers. **C.** Innervation of the forearm.



Primary body maps in the **motor cortex** and **somatosensory cortex** of the cerebrum. The relative amount and location of cortical tissue devoted to each function is proportional to the distorted body diagrams (**homunculi**).

Objective

Our objective is to create systems that **co-adapt** automatically. Moreover, it is of great importance that any wearable orthosis should be **inconspicuous**, in order to enhance social acceptance.

Conclusions

Boys with DMD have a growing **need** for **assistive** technology that supports **hand** function. Such technology is required to grow and adapt to the user.

Contact Information

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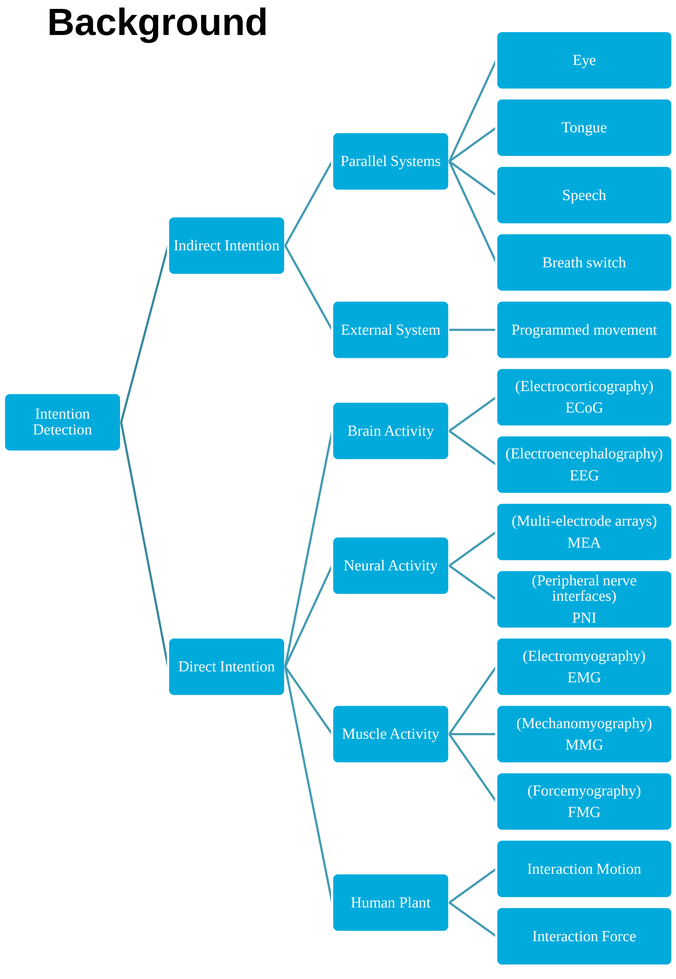
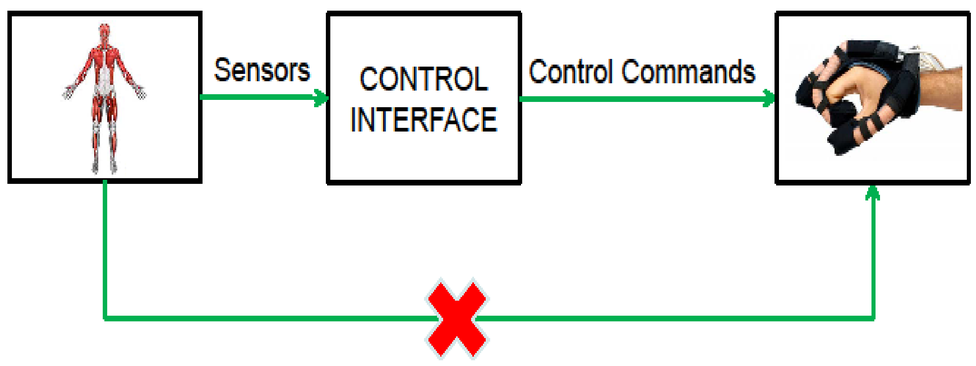
Background





In order for the human to control an active device, a **control interface** is needed. This interface aims to communicate the **intention** of the user to the active device in the form of control commands. These commands result to the intended by the user **movement**.

Acknowledgments

Our work will be conducted in close collaboration with partners including Hankamp Rehab, TMSI, Festo, Pontes Medical and Spieren voor spieren.

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