

**THE SMART SUIT  
PROGRESS REPORT – SEPTEMBER 2023**

As medical research has helped to increase life expectancy, it has become more critical than ever that we invest in improving the quality of life of people living with DMD as they grow older and they lose the strength and function in their upper and lower limbs. Thanks to the kind gift of £50,000 from The Brother's Trust we have been able to accelerate our work in developing the SMART Suit and producing two alpha prototypes for user-testing by the end of 2023. We were delighted to be able to meet with you and showcase our work to date. We are very proud to provide an update on the progress that has taken place since we met thanks to your generous support.



**ON THE ROAD TO ALPHA PROTOTYPES**

When we met in June, we shared three concepts and had selected the 'Drape' concept, which resembled a hydration backpack to take forward to the concept development stage. The next step was to make an easily adaptable prototype of the design to facilitate in-house testing by the design team. This so-called 'Monster Rig' allowed the team to quickly test size, positioning and fit of the various components in the lab, and informed decisions about how to move forward.

*Please note: All prototype and concept images are strictly confidential. Please do not share externally.*

Through testing the 'Monster Rig' on members of the team, we identified several areas where further design development was needed, for example:

- The semi-rigid mounting for the motor (in green, above) needed to extend to both shoulders, and a waist strap added, for the vest to remain secure during the arm lift
- A pivot needed to be added (right) to help the string move with the arm once over the shoulder
- The support under the string (in orange, right) needed to be stiffened and raised off the shoulder entirely to reduce pressure on the clavicle and scapula either side of the shoulder
- The arm cuff itself needed to be highly adjustable to accommodate the variations in arm sizes.



We have also been developing the user control for the Suit, which will take the form of a ring (left) to be worn on the index finger. The ring will feature the basic movement functions while a wheelchair mounted docking station will have more advanced functions such as speed variation. The next stage of development is for the form prototypes (testing size, fit and ergonomics) to be tested with users.

We anticipate that the design will continue to evolve as we move forward to the first integrated prototype for user testing at the end of August. Your kind donations are directly funding this progress of the design development workstream, the final result of which will be two alpha prototypes that we can demonstrate to the public and prospective manufacturing partners to make the SMART Suit a reality for young people with upper limb weaknesses.

**THANK YOU**

Thank you for joining our fight to end Duchenne. With your support we can change the world for people living with the loss of upper body strength and function by smashing down barriers to opportunity and enabling better social inclusion. Every child should be empowered to follow their dreams, the SMART Suit could truly help make dreams come true!

