

ORTHOTIC RESEARCH & LOCOMOTOR ASSESSMENT UNIT (ORLAU)

Concept development & design of adapted standing frame to support patients with cerebral palsy



THE CHALLENGE

The Orthotic Research & Locomotor Assessment Unit (ORLAU) based at the Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust, Oswestry, approached the MTC's Product Manufacturing Incubator (PMI) to see if the MTC could support in the design and production of a new standing frame for patients with cerebral palsy. PMI, along with the MTC's Design and Build team, took up the challenge.



Gabrielle England, Business Development Manager, PMI



The frames, which help individuals to stand supported for periods of time, are used to aid rehabilitation, and can bring about important health benefits that can't be achieved in seated positions.

However, the current standing frames have a number of limitations.

Each frame is bespoke to the user, with limited ability to re-adapt for another patient; consequently, the product lifespan is relatively short and therefore less cost effective. The cost to manufacture is also a factor to address, as is the ease of use by a medical professional and/or carer to support patients getting in and out of the frame.

A lot of standing frame users are also children, and anecdotal feedback is that the frames look 'intimidating' and 'too industrial', and that once in the frames, patients are unable to carry out activities that would help distract and entertain whilst standing e.g. arts and crafts, playing with toys, baking etc.

In working with the MTC, ORLAU set out a series of objectives for the new design concept:

- ▶ Greater comfort and more aesthetically pleasing for the user
- ▶ Improved ease of use for medical professionals / carers
- ▶ Reduced production cost to support low volume manufacture
- ▶ Improved ease of assembly

MTC'S SOLUTION

The process all started with a Discovery Workshop to define the requirements of what was needed to start addressing these challenges.

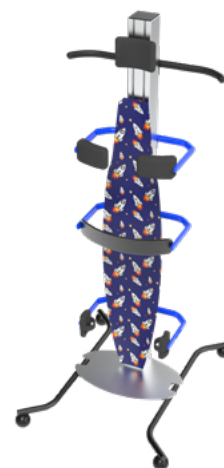
Central to this was understanding how medical professionals and patients would like to use the frame, which would then inform the next phase, concept generation.

Following agreement of the project scope, the Design and Build team came up with a series of design concepts, each addressing key specifications identified from the discovery workshop.

These concepts were shared with the ORLAU team, who identified their preferred concept to take forwards to prototype.

Aluminium extrusion concept with modular design

Key benefits: infinite adjustability and modularity, enabling simple assembly and set-up for each patient.



NEXT STEPS

Upon completion of this concept development phase, the product will be reviewed by both ORLAU and the Design & Build technical governance teams. The Design and Build team will then assemble and produce a first off prototype to present to ORLAU and showcase at the MTC.

We were amazed with the discovery workshop and very impressed by the professionalism and energy that was brought by the team. We found it extremely valuable and that was testament to the manner with which the MTC team interacted and fuelled the discussions on the day. The non-engineers amongst us were blown away by the whole process and amazing facilities. We came away with more in that one day than we hoped for; it was way above our expectations.

Keith Miller CEng MIMechE Clin Sci,
Rehabilitation Engineer, the RJA Orthopaedic Hospital NHS Foundation Trust

