Development of a gait training device for children with cerebral palsy

Ciaran Simms (PI), Gareth J. Bennett & Garret O'Donnell
School of Engineering, Trinity College Dublin

Eamonn McKnight & Ali McCorkell
Moorings Mediquip Ballymena

Introduction

Children with Cerebral Palsy (CP) can generally not walk unaided, but do have some weight bearing ability. Therefore walking aids are often more appropriate than wheelchairs, see figure 1. These devices facilitate mobility and also provide vital mechanical stimulation of the lower limbs [1]. However, existing designs show little evidence of being optimized for ergonomics and biomechanical function, let alone aesthetics. A current collaboration between Moorings Mediquip (Northern Ireland) and Trinity College Dublin funded by an Intertrade Ireland Fusion grant is concerned with developing a new gait trainer for children with CP which has improved functionality and aesthetic features compared to existing products.

Objectives

Design, develop and bring to market a new walking aid device that will allow Moorings Mediquip to grow their market in the UK and Ireland and potentially address the wider European market.

Progress to Date

Fundamental design calculations have been performed to ensure the proposed device is compliant with the Medical Devices Directory requirements. A preliminary prototype has been produced and assembled, see figure 2. Current work is focusing on specific aspects of the interface between the child and the device. Progress is on schedule with the original workplan, see table 1.

Conclusions

Progress is on schedule with the original workplan, and substantial benefits have accrued to both the university and the company through this collaboration.

References


Acknowledgements

Funded by an Intertrade Ireland Fusion grant. The advice from James Hubbard of the Centre for Excellence in Universal Design, National Disability Authority, on various aspects of the mechanical design is also gratefully acknowledged.