Analysis of Stability and Manoeuvrability in Manual Wheelchairs-

Calculation and application of the Centre of gravity of a wheelchair user.

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ABSTRACT

The aim of this project was as follows:

*To implement a way to determine the seated position of a wheelchair user, through the calculation of the centre of gravity (CoG), to assess, monitor, and potentially improve clinical practices and user outcomes at the SW&SC, at the RMH.*

This presentation illustrates the development of a device and a methodology to examine wheelchair stability and maneuverability at the SW&SC. The concept phase’s first step is to analyse the applicability of existing solutions (to calculate the CoG) to the clinical setting at the RMH. Considering the proposed specifications, in addition to the opinions of the clinical staff and project supervisors, an initial general solution will be described.

Prototypes were be developed and trialled in the clinical environment. The prototypes were validated and tested, and an error analysis was performed. Finally objective measures of the clients of the SW&SC were taken and the staff were questioned regarding how the measures can assist their clinical decision making.

Having developed a final device and applicable to the clinical setting, the device and on screen calculation method will be presented. Findings regarding the clinicians’ use and understanding will also be presented.

The goal of introducing a fully functional device to the SW&SC at the RMH, meeting all the device’s specifications, critical calculations and ability to gather valuable feedback from clinicians has been achieved in prototype form and will be presented.

It is considered that this prototype can be implemented into any service without either great expense or difficulty.