Development and Testing of an Innovative User-Adjustable Support Surface for Wheelchair Seating Discomfort

ABSTRACT  Beginning in 2000, a study of discomfort experienced by wheelchair users and development of technology solutions were undertaken. This research culminated with the present study of a new technology targeting sitting discomfort. Support for development of the “Butt Scooter” prototype and its testing was provided through an NIH research grant. Investigators tested a prototype device, called the “Butt Scooter,” and conducted a focus group to obtain expert clinical opinions about the potential usefulness of the prototype. Subject testing of the prototype device followed a single subject design (ABABA). Subjects self-administered the Tool for Assessing Wheelchair discomfort (TAWC) to evaluate their discomfort levels. Results from three subjects are reported. All three expert therapists participating in the focus group responded favorably to the prototype. In summary, results from subject testing were somewhat mixed with regard to discomfort management, however all subjects commented positively on the features of the device.

KEYWORDS  comfort, seating, wheelchair

INTRODUCTION

Preliminary research has been conducted regarding problems experienced by sensate wheelchair users (Crane & Hobson, 2002), and this preliminary work was used to develop and validate a measure for assessing seat discomfort in wheelchair users (Crane et al., 2003, 2005). Concurrent with these efforts, development and testing of potential product solutions was also undertaken. Ultimately, these early efforts led to a project funded by the National Institutes of Health (NIH) (Phase I STTR) to further develop an innovative product to alleviate seating discomfort in wheelchair users with chronic sitting discomfort and intact sensation. The University of Pittsburgh partnered with Falcon Rehabilitation Products to carry out this research and product development project. The objective of this aspect of the project was to develop a potentially