A Dynamic Seating Intervention for Wheelchair Seating Discomfort

ABSTRACT

The objective of this study was to examine the effectiveness of a new user-adjustable wheelchair seating system designed to relieve discomfort for long-duration wheelchair users. This objective was carried out using the newly developed Tool for Assessing Wheelchair discomfort (TAWC) as the primary outcome measure. Two wheelchair users each tested two different designs and feedback from the wheelchair users regarding the first design was used to guide development of the second design. A single-subject research methodology was used, allowing long-duration (up to 2 wks per test) evaluation of the wheelchair seating systems and comparison of subject discomfort levels with those experienced during a baseline period using their own wheelchairs. The experimental wheelchair seating systems employed existing automotive seating with embedded pneumatic bladders that allowed adjustment of the seat and back-support characteristics. The test wheelchair also had tilt, recline, and elevating leg rests. The two subjects completed limited periods of testing with the first design, both finding poor results with either stable or increased levels of discomfort. Subject feedback was used to redesign the wheelchair seat. After redesign, both subjects tested the second design and found it substantially more comfortable. The selected research methodology was a very positive method for a progressive wheelchair seating design and the second design provided improved comfort for both users when compared with that experienced using their own wheelchairs and the first test wheelchair. Future research of this type of user-controlled technology is recommended.

Key Words: Wheelchair Seating, Wheelchair, Discomfort, Disability

Long-duration wheelchair users (i.e., greater than 8 hrs of use per day) with intact sensation frequently experience problematic levels of discomfort. Discomfort has been shown to negatively influence consumer satisfaction, cause decreased quality of life, and lead to problems related to wheelchair propulsion ergonomics—and all of which may impair everyday function and the ability to remain seated in a wheelchair. Yet, few researchers have investigated the nature and causes of wheelchair seat discomfort, or possible solutions to this problem. However, the automotive seating......