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Mike Fray has 20 years experience as a consulting ergonomist, manual handling and rehabilitation adviser, specialising in musculoskeletal injury prevention and management.

Following periods with Ford Motor Co and ICE Ergonomics, he was a Back Care Advisor to a number of NHS Trusts in acute, community and mental health units and private health care providers. For a number of years he has been a Visiting Fellow on the Post-Graduate Back Care Programme at Loughborough University. More recently he was appointed Research Fellow in HEPSU with Dr Sue Hignett.

Publications include the Derbyshire Inter-Agency Group's Code of Practice for 'Care Handling of Adults and Children in Hospitals, Community and Educational Settings' and research review 'Evidence Based Patient Handling. Tasks, Equipment and Interventions' and 'The Handling of People 5th Edition'. He is currently part of the European Panel on Patient Handling Ergonomics and co-author of the ISO Technical Report on Patient Handling Ergonomics. He is currently completing his PhD investigating successful outcomes in EU patient handling interventions.



The Evaluation of a Prototype Patient Handling Device to Assist in a Horizontal Lateral Transfer

Introduction: Transferring patients has long been identified as a contributory cause of MSD in healthcare processes. Many different products have been developed to assist the task of laterally transferring a lying person from one horizontal surface to another. Most require additional manual methods to position the devices before the transfer can take place.

Background: A collaborative project between an equipment manufacturer and the ergonomics research team developed an innovative prototype to reduce the time, error exposure and musculoskeletal risk associated with the lateral transfer process. The iterative development process used design workshops, prototype evaluation and modification between designers, manufactures and ergonomists. This paper describes the evaluation of the prototype with three similar commercial products.

Method: A simulation task was designed as part of the user trial. Participants (n=21) used the prototype and three commercial products for two transfers between a hospital bed and trolley (gurney). Data were collected for the participants carrying out the transfers and the patient being transferred (n=7), including comfort, security, ease of use, time and overall preference. Further physical evaluations were conducted from video-recordings of the tasks. The forces for the physical tasks were calculated using a Mecmesin AFG2500N force gauge for both pushing and pulling actions using repeated measures.

Analysis: The physical measures were combined to give a risk exposure score based on time and force. A simple ANOVA with repeated measures calculation was used for data sets evaluated across all conditions, i.e. time, force and risk exposure. A Friedman's test was used to identify differences between the conditions for individual subjective scores and the comparison ranked data sets. If significant variations were identified post hoc analyses was conducted using Paired T-tests.

Results: Significant differences were found for the physical measures with the handling methods used for the prototype and the three commercial products. The patient feedback was significantly better for the prototype and there were noted differences in the subjective scores for the handlers. The concept of the prototype was found to be successful and minor recommendations for improvements were made from the trial.