BALTIC JOURNAL OF SPORT & HEALTH SCIENCES
5(Supplement); 2025; p. 53; eISSN 2538-8347
DOI: https://doi.org/10.33607/bjshs.v5iSupplement.1804

Co-Design of the REACH-SCI (Reducing Sedentary Activities to Improve Cardiovascular Health for Individuals With a Spinal Cord Injury) Intervention Using the Behaviour Change Wheel

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Purpose: Individuals with spinal cord injury, such as paraplegia, can be highly sedentary, which is an independent risk factor for cardiovascular disease. There is a lack of interventions targeting sedentary behaviour in individuals with paraplegia, necessitating their development and evaluation in this population group. Sedentary behaviour interventions designed for non-disabled people are unlikely to be generalisable to manual wheelchair-users with paraplegia, meaning a tailored approach is required. This study aimed to co-design a sedentary behaviour intervention for manual wheelchair-users with paraplegia using the Behaviour Change Wheel (BCW).

Methods: An iterative co-design approach was employed via two inter-connected workshops, guided by the BCW framework. Workshops included 10 individuals with paraplegia, 13 healthcare professionals, two charity workers, and two family members. Initial workshops centred around barriers and facilitators to reducing and breaking up sedentary behaviour and possible solutions to overcome barriers and target facilitators; this informed the development of intervention concepts which were then mapped to relevant behaviour change techniques. In subsequent workshops, the Acceptability, Practicability, Effectiveness, Affordability, Safety, and Equity (APEASE) criteria were used to refine the intervention protocol. Data were analysed using the framework method via inductive and deductive coding, in context of the BCW.

Results: The co-designed intervention will include (1) a wearable activity tracker to monitor physical activity and provide reminders to break up inactivity, (2) educational resources around sedentary behaviour, potential benefits of reducing and breaking up sedentary behaviour, and potential strategies to achieve the target behaviours, (3) setting goals related to sedentary behaviour, (4) one-to-one motivational support from a trained individual, (5) a peer support WhatsApp group chat with other participants, and (6) resistance bands and a handcycle to enable activity breaks throughout the day.

Conclusion: This co-design study has led to the development of a novel sedentary behaviour intervention tailored for individuals with paraplegia. The acceptability, fidelity, safety, and preliminary efficacy will be evaluated in a future study to inform progression to a definitive randomised controlled trial. This research could inform future healthcare and public health guidelines with a focus on reducing sedentary behaviour in this population.

Support/Funding Source: This research received no external funding.