

Can e-bikes be a feasible method of physical outdoor activity for stroke survivors?

This research is adapted from *Exploring the factors influencing the use of electrically assisted bikes (e-bikes) by stroke survivors: a mixed methods multiple case study* published by Taylor & Francis in Disability and Rehabilitation. Scan the QR code at the bottom of this poster to read the full article.

AUTHORS: Paul Boland, Louise Connell, Clare Thetford & Jessie Janssen

BACKGROUND

Stroke survivors can face a number of restrictions to physical and outdoor activities as a result of impairments and disability. Electrically assisted bikes (e-bikes) provide assistance whilst peddling and have the potential to overcome some of these barriers. This study aimed to explore the factors that affect e-bike usage by stroke survivors.

INTERVENTION

- Full participation was subject to GP approval.
- Participants could loan an e-bike or e-trike for up to 3 months.
- Interviews were conducted pre and post intervention to explore the perception and experiences of using the e-bike/e-trike.
- GPS data recorded information about the participants e-bike/e-trike usage and was collected fortnightly from GPS trackers installed on the bikes.

FINDINGS

Six participants were recruited but only three went onto loan an e-bike/e-trike (Table 1). Below are the factors identified from the analysis from the interview data pre and post intervention.

IMPAIRMENT

- Level of impairment influenced:
- the type of e-bike selected
 - adaptations required
 - ability to cycle

SOCIAL SUPPORT

- Social support was an important factor that came in the form of:
- encouragement
 - a companion to cycle with
 - help those with severe impairments to mount and dismount the e-trike
 - lack of GP approval prevented one participant from fully taking part

ENVIRONMENT

- Environmental factors included:
- a lack of storage space for an e-trike was a reason for withdrawal
 - safe places to cycle

THE E-BIKE

- Factors surrounding the e-bike/e-trike itself were:
- the weight of the e-bike and battery life
 - the majority of participants reported the electrical assistance gave them the confidence to cycle further for long, although one participant preferred to cycle without the assistance as it was deemed too fast for them
 - misconceptions about how the e-bike works

MOTIVATION

- Motivating factors that influenced e-bike use were:
- it was seen as a form of enjoyable physical activity
 - increased independence
 - an opportunity to return to a previous activity
 - concerns around safety saw one participant withdrawing
 - a fear of bumping into things

DESIGN

A mixed methods multiple case study design consisting of:

- Semi-structured interviews
- Global Positioning System (GPS) data

ANALYSIS

- Interview data were anonymised and transcribed in NVivo and the COM-B behaviour change model acted as a framework for analysis. GPS data were analysed in Excel and ArcGIS to calculate the number, time and distance of each journey.

Table 1: Journey information for the participants who loaned an e-bike/e-trike

Name (age)	Brian (72)	Jim (63)	Rob (56)
Type of e-bike	E-trike	E-bike	E-trike
Adaptations	Brakes	None	Brakes and pedals
Number of weeks loan	11	8	8
Number of journeys completed	7	13	3
Average distance (km)	2.45	13.97	1.68
Average journey length (min)	16	48	27

CONCLUSIONS

- Stroke survivors can use e-bikes although barriers exist.
- The assistance provided by the e-bike/e-trike could provide stroke survivors the opportunity to cycle outdoors and facilitate participation in activities of everyday living and increase levels of physical activity.
- Due to the small number of participants who were able to loan an e-bike, further research is required to determine whether e-bikes are a feasible and effective intervention for stroke survivors.

Stroke survivors can use e-bikes although level of impairment and support from family members were important factors that affected their use.



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