



Functional Electrical Stimulation (FES) enables long term mobility for people with Multiple Sclerosis (PwMS) who are the most impaired walkers

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Introduction

There is little research in the long-term benefits of PwMS using FES for mobility and the maintenance of safe independent walking. Walking ability is known to deteriorate over time for PwMS¹. Long term comparative objective outcome measures are therefore difficult to collect. This study examines the retrospective qualitative and self-reported quantitative data for a cohort of PwMS being treated at Birmingham FES clinic who are able to walk 10m safely when using FES but not without FES. These are the most impaired walkers due to the deterioration in their MS and mobility.

Method

- Data is collected for PwMS who use FES for walking from baseline (day one of FES use), at 6 months of FES use and annually thereafter in the Birmingham UK FES Clinic.
- **77 PwMS** who are **able to walk 10 metres with FES but not without FES** were identified from the Access database.
- **39 of the 77 patients** also had complete self-reported **Visual Analogue Scales (VAS)** records on the database for the same time periods.
- VAS data includes **Frequency of Tripping** and **Level of Confidence when walking**.
- The **baseline and most recent Objective and Subjective Outcome measures** were analysed for this cohort of PwMS who are the most impaired walkers.

Conclusion

Despite progression of MS, long-term users of FES continue to benefit from its orthotic effect as they cannot walk a distance of 10m without FES.

In addition this study demonstrates the longitudinal subjective benefits experienced by some users of FES with higher levels of confidence and lower levels of tripping whilst walking for up to 16 years of FES treatment.

Of interest is the ratio of male to female in this cohort which does not conform to the known gender ratio for PwMS of 3 females to 1 male.

Further work is needed to study the long-term use of FES for PwMS.

Reference: (1) Street T, Taylor P, Swain I, Effectiveness of Functional Electrical Stimulation on Walking Speed, Functional Walking Category, and Clinically Meaningful Changes for People With Multiple Sclerosis, Archives of Physical Medicine and Rehabilitation 2015;96:667-72.

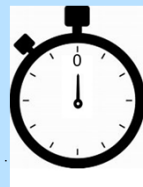
Acknowledgement: With grateful thanks to the patients and staff of the FES Service in Birmingham for their cooperation with data collection and sharing information.

Results

77 PwMS were able to walk a minimum of 10m safely with the use of FES and walking aids, but were unable to complete this distance without FES

Gender: 43 females (56%); 34 males (44%)
Ave. age: 60 years
Ave. time since diagnosis: 21 years
Ave. use of FES: 5.7 years (Range: Under 1 to 16 yrs)

Walking speed over 10 metres (n = 77)



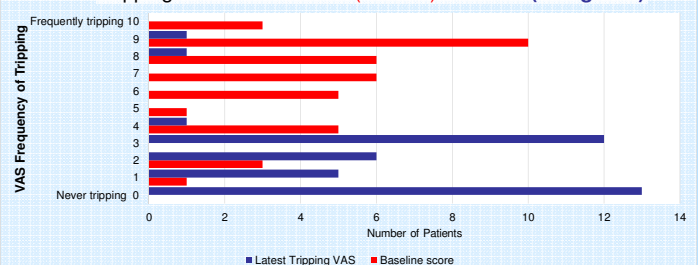
No FES
0 metres per minute



With FES
Ave: 17.8 metres per minute
Range: 3- 56.4 metres per minute

Visual Analogue Scores (n = 39)

Tripping scores at **Baseline (no FES)** & **Latest (using FES)**



Confidence scores at **Baseline (no FES)** & **Latest (using FES)**

