

Functional Electrical Stimulation (FES): A Sustainable Long-Term Treatment for People with Multiple Sclerosis (PwMS)

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Introduction

Multiple sclerosis (MS) is a deteriorating neurological disease that can lead to muscle weakness in the lower limbs, affecting mobility and quality of life. FES is an assistive technology that is recommended to support gait for PwMS^{1,2}. Electrodes are placed on the surface of the skin to stimulate muscles to lift the foot during walking providing stability and improving gait¹. Recent FES guidelines make recommendations for the long-term support of FES-users². At the Birmingham UK FES Clinic there are PwMS that have been supported to use FES for over 20 years to aid their walking. This retrospective analysis of data reviews the sustainability of gait function with long-term FES in the form of a drop foot stimulator for PwMS and reviews the concept that every contact should count.

Method

- Snapshot of current active caseload of PwMS
- Date: 20/11/23
- Taken from our database

Inclusion

- PwMS
- Using a dropped foot stimulator for gait

Exclusion

- Using a stimulator for exercise only
- Discharged patients

Data Collated

- Duration of treatment
- Age
- Number of appointments gathered from 3 longest users
- 20+ year user feedback

Results

Summary of Findings

| | |
|--|-------------|
| Current users of FES for gait | 345 PwMS |
| 10+ years of use | 77 PwMS |
| 20+ years of use | 3 PwMS |
| Age range of users | 27-82 years |
| 80 years and older users | 3 PwMS |
| Average length of current use | 6 years |
| Average no. of appointments for 20+ year use | 26 |

“Using FES has enabled me to continue to work full time, even beyond my normal retirement age”

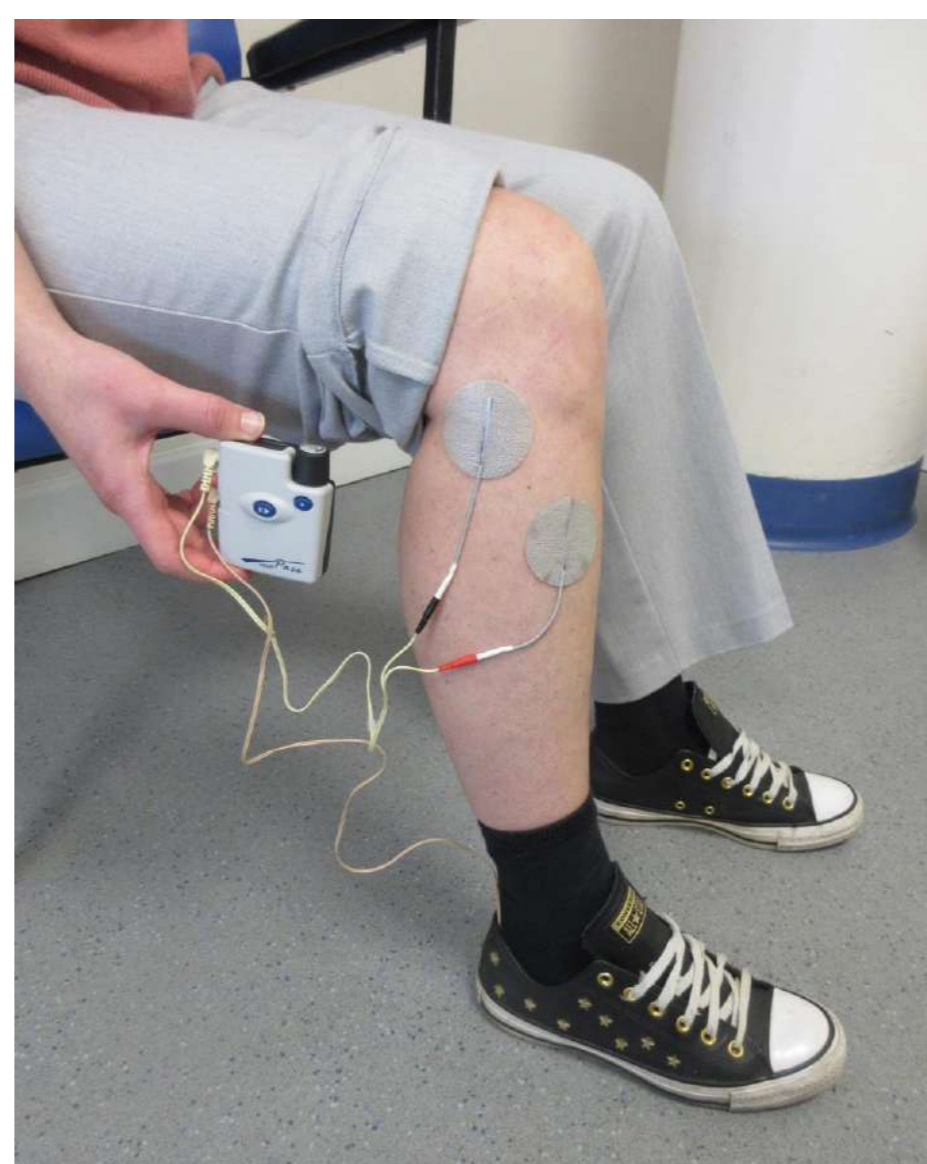
FES-user for 22 years

“It’s been absolutely wonderful and has kept me walking...It has been a lifeline from day 1”

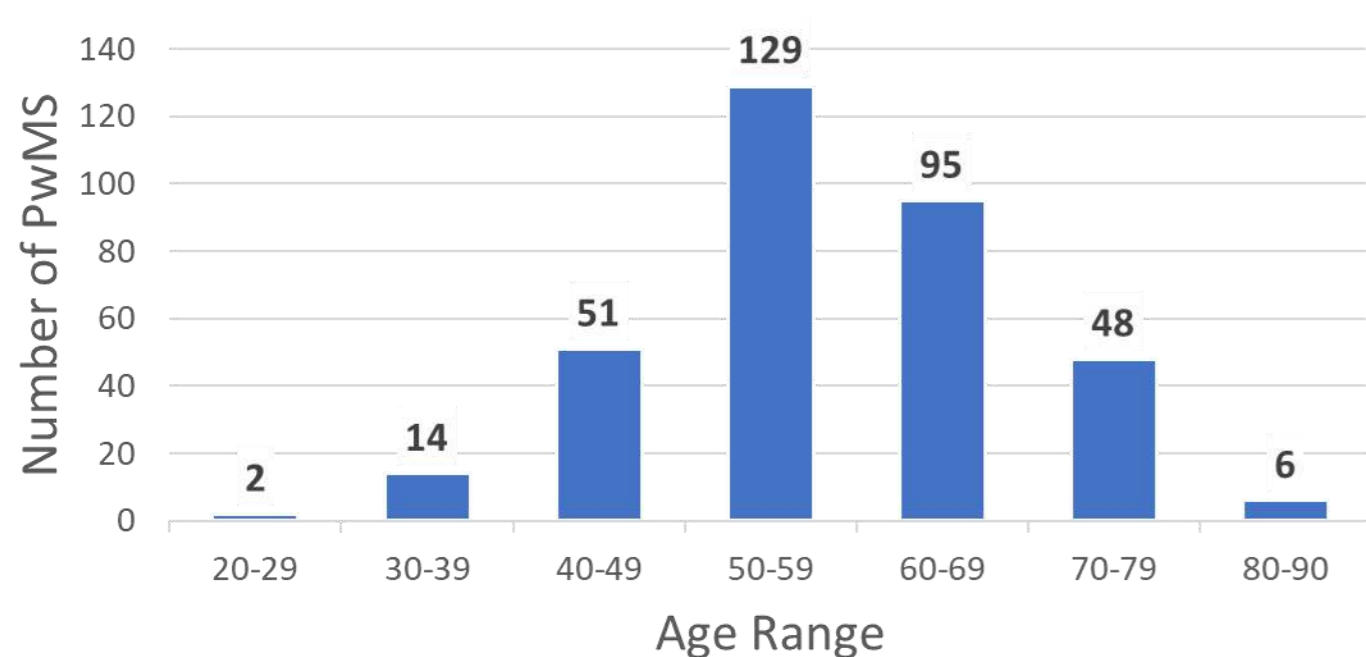
FES-user for 21 yrs

“Having used the ODFS PACE for 20 years, I am now in my 81st year and looking forward to keeping up the PACE for the next 20 years – it’s like an extra leg”

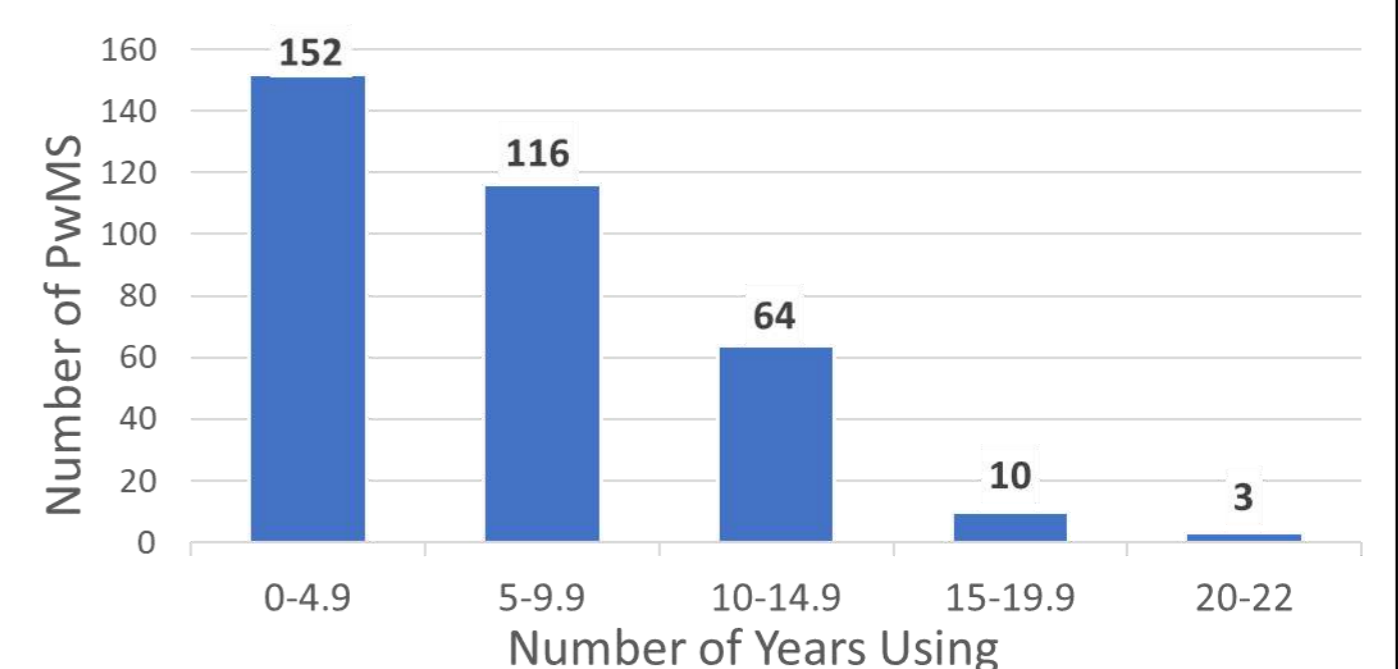
FES-user 21 years



Active FES Users by Age Group



Active FES Users by Years Active



Discussion

The Birmingham UK FES Clinic has a substantial caseload of PwMS using FES to aid their gait. Despite MS being a deteriorating condition, the current PwMS caseload has an average FES length of use of 6 years. Seventy seven PwMS have over 10 years usage. The data and patient comments support the use of FES as a long-term treatment sustaining gait function for up to 20+ years. It is a universal treatment across ages. The average number of appointments for our long-term users aligns with our pathway of care eg: 5 appointments in the first year of use, then annual reviews. Guidelines recommend the use of FES for gait function and our data supports its long term use and benefits as described by PwMS comments.

Conclusion

The age range of users and length of use of FES supports the hypothesis that FES is a sustainable long-term treatment for gait. Once treatment is established, a meaningful interaction with patients will enable PwMS to independently manage FES for a whole year before another appointment is needed, making every contact count.

Acknowledgements: With grateful thanks to the patient involved.

References:

1. National Institute for Health and Care Excellence. (2009). *Functional electrical stimulation for drop foot of central neurological origin* (NICE Guideline No. 278). <https://www.nice.org.uk/guidance/ippg278>
2. ACPIN Clinical Guideline Working Group. Evidence Based Clinical Guidelines for the use of Functional Electric Stimulation to Improve Mobility in Adults with lower limb impairment due to an upper motor neuron lesion. Association of Chartered Physiotherapists in Neurology: 2022 www.acpin.net

