FES Evidence

In excess of 7000 patients have received treatment for dropped foot using FES in Salisbury since the service began. Over 20,000 have received treatment elsewhere in the UK.

The Odstock Dropped Foot Stimulator (ODFS®) Pace was developed at Salisbury District Hospital under funding from the Department of Health.

The device was evaluated for dropped foot in chronic stroke in a randomised controlled trial (RCT).^{1,2} Additional case series data was collected from patients with MS and incomplete spinal cord injury.³ The studies demonstrated:

- Increased walking speed when the ODFS[®] Pace is used
- Reduced walking effort
- Reduced spasticity
- Increased quality of life
- Significant cost utility gain (cost-effectiveness QALY analysis)

The clinical service modal and evidence for the ODFS® Pace were presented to the Development and Evaluation Committee of the South and West Regional Health Authority who subsequently recommended the treatment for use in the NHS for patients with dropped foot due to upper motor neurone lesions.^{4,5} An audit of the clinical service confirms the results of the RCT and demonstrates a training `effect from using the ODFS® and a high level of treatment adherence (86% at one year).^{6,7,8,9} The main reasons patients choose to continue to use the ODFS® are:¹⁰

- Reduced effort of walking
- Increased confidence when walking
- Reduced trips and falls

A RCT of the use of the device with secondary progressive MS demonstrated increased walking speed with the device, 72% reduction in falls and a significant positive impact on activities of daily living in comparison to a group that received physiotherapy.^{11, 12} An audit of 186 users of the ODFS® Pace who had MS showed that FES improves functional ambulation category.¹⁵





The ODFS® Pace has been demonstrated to be a clinically and costeffective long term assistive device with an average use of 5 years,^{17, 18} and it can be cost-effective in comparison to an ankle foot orthosis.¹⁹

Studies using the ODFS® Pace with people who have Parkinson's disease indicated that the device may have a significant training effect, reducing bradykinesia and may also reduce falls and freezing.^{13, 20, 25}

Use of FES is recommended in the Royal College of Physicians National Clinical Guidelines for Stroke for the UK and Ireland.¹⁴

FES is recommended in the NICE guidelines IPG278,^{16, 21, 2,3 24} ACPIN guidelines²⁶ and ANPT guidelines.²²

References:

1. Burridge JH, Taylor PN, Hagan SA, Wood DE, Swain ID. The effect of common peroneal nerve stimulation on quadriceps spasticity in hemiplegia. Physiotherapy, 83(2): 8289, 1997.

2. Burridge J, Taylor P, Hagan S, Wood D, Swain I. (1997) The effects of common peroneal nerve stimulation on the effort and speed of walking: A randomised controlled clinical trial with chronic hemiplegic patients. Clin Rehabil 11. 201-210.

3. Burridge JH, Taylor PN, Hagan SA, Swain ID. Experience of the clinical use of the Odstock Drop Foot Stimulator. Artificial Organs 21(3): 254260, 1997

4. Swain ID, Taylor PN, Burridge JH, Hagan SA, Wood DE. Report to the development evaluation committee Common peroneal stimulation for the correction of drop-foot (1996) https://odstockmedical.com/knowledge/ the-dec-report-report-to-the-development-evaluation-committee-common-peroneal-stimulation-for-thecorrection-of-drop-foot/

5. Taylor P, Mann G, Jolley C, Swain I. Economic Justification for the Odstock Dropped Foot Stimulator (ODFS). ISPO meeting 3rd Nov 2007 https://odstockmedical.com/wp-content/uploads/cost_benefit_paper_4.pdf

6. Taylor PN, Burridge JH, Wood DE, Norton J, Dunkerley A, Singleton C, Swain ID. Clinical use of the Odstock Drop Foot Stimulator its effect on the speed and effort of walking. Archives of Physical Medicine and Rehabilitation, 80: 1577-1583, 1999.

7. Taylor PN, Burridge JH, Wood DE, Norton J, Dunkerley A, Singleton, C, Swain ID. Clinical audit of five years provision of the Odstock Drop Foot Stimulator. Artificial Organs, 23(5): 440-442, 1999.

8. Taylor PN. The use of electrical stimulation for correction of dropped foot in subjects with upper motor neuron lesions. Advances in Clinical Neuroscience and Rehabilitation, 2(1): 16-18, 2002.

9. Swain ID, Taylor PN. The clinical use of functional electrical stimulation in neurological rehabilitation. In: Horizons in Medicine 16 – Updates on major clinical advances. Ed. Franklyn J. Pub. Royal College of Physicians, ISBN 1-86016-233-9, London, pp. 315-322, 2004.

10. Taylor PN, Burridge JH, Wood DE, Norton J, Dunkerley A, Singleton, C, Swain ID. Patient perceptions of the Odstock Drop Foot Stimulator. Clinical Rehabilitation, 13: 333-340, 1999.

11. Mann GE, Jolley CJ, Taylor PN. An investigation into the effect of functional electrical stimulation on mobility and quality of life in patients with Multiple Sclerosis. 10th Annual Conference of the International FES Society, pp. 309-311, Montreal, Canada, July 2005.

12. Esnouf JE, Taylor PN. Does the Canadian Occupational Performance Measure determine if the Odstock Drop Foot Stimulator improves activities of daily living for people with multiple sclerosis? 9th Annual Conference of the International FES Society and 2nd FESnet Conference, (ISBN 1-85899-191-9), pp. 267-269, Bournemouth, UK, September 2004.

13. Mann GE, Finn SM, Taylor PN. A Pilot study to investigate the feasibility of electrical stimulation to assist gait in Parkinson's disease. Neuromodulation,11 (2) 2008 accepted for publication

14. National Clinical Guideline for Stroke for the UK and Ireland. London: Intercollegiate Stroke Working Party; 2023 May 4. Available at: www.strokeguideline.org.

15. Street TD, Taylor PN, Swain ID. The Effectiveness of Functional Electrical Stimulation on Walking Speed, Functional Walking Category and Clinically Meaningful Changes for People with Multiple Sclerosis. Archives of Physical Medicine. Volume 96, Issue 4, April 2015, Pages 667–672

www.odstockmedical.com



References (contd):

 16. http://www.nice.org.uk/Guidance/IPG278 Functional electrical stimulation for drop foot of central neurological origin N1733 IP ISBN 84629-846-6 Jan O9 & Treating drop foot using electrical stimulation N1734 IP ISBN 1-84629-847-4 Jan O9

17. Taylor P, Humphreys L, Swain I. A 15 year cost-effectiveness study of the use of FES for the correction of dropped foot in Multiple sclerosis. Multiple Sclerosis Journal 2014;20:(7) 1001-2

18. Juckes FM, Marceniuk G, Seary C, Stevenson VL A cohort study of functional electrical stimulation in people with multiple sclerosis demonstrating improvements in quality of life and cost-effectiveness. Clin Rehabil. 2019 Apr 10:269215519837326.

19. Renfrew LM, Paul L, McFadyen A, Rafferty D, Moseley O, Lord AC, Bowers R, Mattison P. The clinicaland cost-effectiveness of functional electrical stimulation and ankle-foot orthoses for foot drop in Multiple Sclerosis: a multicentre randomized trial. Clin Rehabil. 2019 Apr 11:269215519842254. doi: 10.1177/0269215519842254.

20. Taylor PN, Sampson T, Beare B, Donavon-Hall M, Thomas P, Marques E, Strike P, Seary C, Stevenson VL, Padiachy D, Lee J, Nell S. The Effectiveness of Peroneal Nerve Functional Electrical Simulation for the Reduction of Bradykinesia in Parkinson's Disease: A Feasibility Study for a Randomised Control Trial. J. Clin. Rehab. Oct 2020, Rehabilitation. https://journals.sagepub.com/doi/full/10.1177/0269215520972519

21. ODFS Pace and Pace XL functional electrical stimulation devices for treating drop foot. NICE advice [MIB56] Published date: March 2016 https://www.nice.org.uk/advice/mib56

22. Johnston TE, Keller S, Denzer-Weiler C, and Brown L. A Clinical Practice Guideline for the Use of Ankle-Foot Orthoses and Functional Electrical Stimulation Post-Stroke Academy of Neurologic Physical Therapy, printed in Journal of Neurologic Physical Therapy: April 2021-Volume 45 – Issue 2 – p112-196. file:///E:/back%20 up%20Paul/Paul/ref%20papers/A_Clinical_Practice_Guideline_for_the_Use_of.6.pdf

23. Cerebral palsy in adults NICE guideline [NG119] Published date: January 2019 https://www.nice.org.uk/guidance/ng119/chapter/Recommendations

24. Multiple sclerosis in adults: management NICE guideline [NG220]Published: 22 June 2022 https://www. nice.org.uk/guidance/ng220/chapter/Recommendations#ms-symptom-management-and-rehabilitation

25. Popa L and Taylor P. Functional electrical stimulation may reduce bradykinesia in Parkinson's disease: A feasibility study. Journal of Rehabilitation and Assistive Technologies Engineering January – Dec 2015 doi:10.1177/2055668315607836

26. https://www.acpin.net/pdfs/2210%20QMU%20Report.pdf

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