



## Published papers and proceedings from Salisbury about the ODFS

1. 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. Rehabil.* Oct 2020, Rehabilitation.  
<https://journals.sagepub.com/doi/full/10.1177/0269215520972519>
2. Street T, Singleton C Five-Year Follow-up of a Longitudinal Cohort Study of the Effectiveness of Functional Electrical Stimulation for People with Multiple Sclerosis *Int J MS Care.* 2018 Sep-Oct;20(5):224-230. doi: 10.7224/1537-2073.2016-094.
3. James Badger, Paul Taylor, Ian Swain. The safety of electrical stimulation in patients with pacemakers and implantable cardioverter defibrillators: A systematic review. RATE published on line December 2017
4. Tamsyn Street & Christine Singleton (2017): A clinically meaningful training effect in walking speed using functional electrical stimulation for motor-incomplete spinal cord injury, *The Journal of Spinal Cord Medicine*
5. Street T, Swain I, Taylor P. Training and orthotic effects related to functional electrical stimulation of the peroneal nerve in stroke. *J Rehabil Med.* 2017 Jan 31;49(2):113-9.
6. 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 - December 2015 2: 2055668315607836, first published on October 26, 2015 doi:10.1177/2055668315607836
7. Sheffler LR, Taylor PN, Bailey SN, Gunzler DD, Buurke JH, IJzerman MJ, Chae J: Surface peroneal nerve stimulation in lower limb hemiparesis: effect on quantitative gait parameters. *Am J Phys Med Rehabil* 2015;00:00Y00.
8. 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
9. Wilkinson I, Taylor P, Windrup J, Burridge J. 'Talking about walking' – a qualitative exploration of changes in walking post-stroke from the perspective of a stroke survivor. *International Journal of Stroke Vol 9 (Suppl 4) 2014 31*
10. Street T, Taylor, P, Swain I. The practical use of functional electrical stimulation (FES) in the treatment of dropped foot for people with stroke. *International Journal of Stroke Vol 9 (Suppl 4) 2014 40*
11. Street, T, Taylor P, Swain I. The practical use of Functional Electrical stimulation in the treatment of people with multiple sclerosis. *Multiple Sclerosis Journal 2014;20:(7) 1000*

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12. Street, T, Taylor P, Swain I. A comparison between ankle assisted orthotics and Functional Electrical Stimulation: a feasibility study. *Multiple Sclerosis Journal* 2014;20;(7) 1001
  13. 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
  14. Wilkinson IA, Burridge J, Strike P, Taylor P. A randomised controlled trial of integrated electrical stimulation and physiotherapy to improve mobility for people less than 6 months post stroke. *Disabil Rehabil Assist Technol*, Early Online: 1–7, 2014 Informa UK Ltd. DOI: 10.3109/17483107.2014.917125
  15. Sheffler LR, Taylor PN, Gunzler DD, Buurke JH, IJzerman MJ, Chae J. Randomized Controlled Trial of Surface Peroneal Nerve Stimulation for Motor Relearning in Lower Limb Hemiparesis. *Archives of Physical Medicine and Rehabilitation* 2013;94:1007-14
  16. Taylor P., Barrett C., Mann G., Wareham W., Swain I. 2013. A Feasibility Study to Investigate the Effect of Functional Electrical Stimulation and Physiotherapy Exercise on the Quality of Gait of People With Multiple Sclerosis. *Neuromodulation*. 2014 Jan;17(1):75-84; discussion 84. doi: 10.1111/ner.12048. Epub 2013 Apr 19.
  17. Taylor P, Humphreys L, and Swain I, The long-term cost-effectiveness of the use of functional Electrical stimulation for the correction of dropped foot Due to upper motor neuron lesion. *J Rehabil Med* 2013; 45: 154–160
  18. Marsden J., Stevenson V., McFadden C., Swain I., Taylor P. 2012. The Effects of Functional Electrical Stimulation on Walking in Hereditary and Spontaneous Spastic Paraparesis. *Neuromodulation* 2012; E-pub ahead of print. DOI: 10.1111/j.1525-1403.2012.00494.x
  19. JE Esnouf, PN Taylor, GE Mann, CL Barrett. Impact on falls and activities of daily living of use of a Functional Electrical Stimulation (FES) device for correction dropped foot in people with multiple sclerosis. *Mult Scler* 2010;16 1141-1147
  20. Barrett CL, Taylor PN. The effects of the Odstock Drop Foot Stimulator on Perceived Quality of Life for People with Stroke and Multiple Sclerosis. *Neuromodulation* 2010 13, 1, pp: 58-64
  21. CL Barrett, GE Mann, PN Taylor and P Strike. A randomized trial to investigate the effects of functional electrical stimulation and therapeutic exercise on walking performance for people with multiple sclerosis. *Mult Scler*. 2009 Apr;15(4):493-504
  22. Geraldine E. Mann, Stacey M. Finn, Paul N. Taylor A Pilot Study to investigate the Feasibility of Electrical Stimulation to Assist Gait in Parkinson's Disease. *Neuromodulation Volume 11 Number 2, 143-149, 2008*

23. Burridge JH, Elessi K, Pickering RM, Taylor PN. Walking on an uneven surface: the effect of common peroneal nerve stimulation on gait parameters and relationship between perceived and measured benefits in a sample of participants with a drop foot. *Neuromodulation*, 10(1): 59-67, 2007
24. Taylor P, Mann G, Jolley C, Swain I. Economic Justification for the Odstock Dropped Foot Stimulator (ODFS). ISPO meeting 3rd Nov 2007
25. Mann GE, Finn SM. A pilot study to investigate the effects of FES on gait in Parkinson's Disease. *RESCUE conference – Rehabilitation in Parkinson's Disease: strategies for cueing*. Meervart, Amsterdam, the Netherlands, March 2005.
26. 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. *10<sup>th</sup> Annual Conference of the International FES Society*, pp. 309-311, Montreal, Canada, July 2005.
27. 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. *Annual Conference of the MS Trust*, Blackpool, UK, November 2005.
28. 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.
29. Johnson, CA.; Burridge, JH.; Strike, PW.; et al (2004) The effect of combined use of botulinum toxin type A and functional electrical stimulation in the treatment of spastic foot drop after stroke: a preliminary investigation. *Archives of Physical Medicine and Rehabilitation*, 85(6): 902-9.
30. Taylor PN. The use of electrical stimulation for correction of dropped foot in subjects with upper motor neurone lesions. In: *IV. Ulusal Protez ve Ortez Kongresi (IV National Congress of Prosthetics and Orthotics)*, Ed. Alsancak S, Pub. Lazer Ofset, ISBN 975-97416-1-X, pp. 235-242, 2004.
31. Wright PA, Mann GE, Swain I. A comparison of electrical stimulation and the conventional ankle foot orthosis in the correction of a dropped foot following stroke. *9<sup>th</sup> Annual Conference of the International FES Society and 2<sup>nd</sup> FESnet Conference*, (ISBN 1-85899-191-9), pp. 308-310, Bournemouth, UK, September 2004.
32. Taylor P, Johnson M, Mann G, Swain I. Patterns of use and users' perceptions of the Odstock Dropped Foot Stimulator following stroke and multiple sclerosis. *9<sup>th</sup> Annual Conference of the International FES Society and 2<sup>nd</sup> FESnet Conference*, (ISBN 1-85899-191-9), pp. 296-298, Bournemouth, UK, September 2004.
33. Mann GE, Jolley CL, Taylor PN. An investigation into the effect of functional electrical stimulation on mobility and quality of life in patients with multiple sclerosis – preliminary results. *9<sup>th</sup> Annual Conference of the International FES*



Society and 2<sup>nd</sup> FESnet Conference, (ISBN 1-85899-191-9), pp. 276-278, Bournemouth, UK, September 2004.

34. 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? 9<sup>th</sup> Annual Conference of the International FES Society and 2<sup>nd</sup> FESnet Conference, (ISBN 1-85899-191-9), pp. 267-269, Bournemouth, UK, September 2004.
35. Mann GE, Finn SM, Taylor PN. A pilot study to investigate the effects of functional electrical stimulation on gait in Parkinson's Disease. 9<sup>th</sup> Annual Conference of the International FES Society and 2<sup>nd</sup> FESnet Conference, (ISBN 1-85899-191-9), pp. 62-64, Bournemouth, UK, September 2004.
36. Taylor PN, Mann GE, Swain ID. Does prior use of an ankle foot orthosis (AFO) effect the response to use of the Odstock Dropped Foot Stimulator? Annual Scientific Meeting of the Institute of Physics and Engineering in Medicine, (ISBN 1-903613-19-1), pp. 89-90, Bath, UK, September 2003.
37. Grundy D, Tromans A, Hobby J, North N, Swain ID. Chapter 14 - Later management and complications II. In: ABC of Spinal Cord Injury, 4<sup>th</sup> edition, Ed. Grundy D and Swain A, Pub. BMJ, ISBN 0-7279-1518-5, 2002.
38. Taylor P, Burridge J. Functional electrical stimulation - the Odstock Dropped Foot Stimulator. In: Understanding Stroke, Ed. Rosemary Sasso, Pub. Pardoe Blacker Publishing, ISBN 1-897739-16-8, pp. 72-78, 2002.
39. Malone LJ, Ellis-Hill C, Taylor P, Swain I. Using the Odstock Dropped Foot Stimulator: Users and Partner's Perspectives. 7th Ann Conf of the International FES Society, pp. 24-25, Ljubljana, Slovenia, June 2002.
40. Johnson CA, Tromans AM, Wood DE, O'Keeffe D, Buhrs D, Swain ID, Burridge JH. A pilot study to investigate the combined effect of (Botulinum Neurotoxin Type A) BoNTA and functional electrical stimulation (FES), with physiotherapy, in the treatment of spastic dropped foot in subacute stroke. *Artificial Organs*, 26(3): 293-294, 2002.
41. Finn SM, Mann GE, Taylor PN. Using functional electrical stimulation in Parkinson's disease. *Artificial Organs*, 26(3): 290-291, 2002.
42. 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.
43. Finn SM, Mann GE, Taylor PN. Using functional electrical stimulation in Parkinson's disease. 7<sup>th</sup> International Workshop on FES, (ISBN 3-900928-05-3), Vienna, Austria, pp. 176-179, September 2001.
44. Swain ID, Burridge JH, Johnson CA, Mann GE, Taylor PN, Wright PA. The efficacy of functional electrical stimulation in improving walking ability for

- people with multiple sclerosis. *6<sup>th</sup> IPEM Annual National Conference*, (ISBN 0-904181-96-0), p. 98, Southampton, UK, September 2000.
45. Swain ID, Burridge JH, Johnson CA, Mann GE, Taylor PN, Wright PA. The efficacy of functional electrical stimulation in improving walking ability for people with multiple sclerosis. *5<sup>th</sup> Annual Conference of the International FES*
  46. Burridge JH, McLellan DL. Relation between abnormal patterns of muscle activation and response to common peroneal nerve stimulation in paraplegia. *Journal of Neurology, Neurosurgery and Psychiatry*, 69: 353-361, 2000.
  47. Burridge JH, Wood DE, Taylor PN, McLellan DL. The relationship between abnormal patterns of muscle activation and response to common peroneal nerve stimulation in hemiplegia. *4<sup>th</sup> Annual Conference of the International Electrical Stimulation Society*, (ISBN 4-9980783-0-5), pp. 189-192, Sendai, Japan, August 1999.
  48. Kinsella SM, O'Keefe D, Wood DE, Lyons GM. A case study of the effects of functional electrical stimulation for drop foot in a subject with hemiplegia. *Physiotherapy Ireland*, 20(1): 9-13, 1999.
  49. 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.
  50. 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.
  51. 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.
  52. Taylor PN, Burridge JH, Dunkerley AL, Norton J, Wood DE, Singleton C, Swain ID. Long term follow up of 160 users of the Odstock Dropped foot stimulator. *6<sup>th</sup> International Workshop on FES*, (ISBN 3-900928-04-5), Vienna, Austria, pp. 189-192, September 1998.
  53. Burridge JH, Taylor PN, Swain ID. A review of the literature published for the correction of peroneal nerve stimulation for the correction of dropped foot. *Reviews in Clinical Gerontology*, 8: 155-161, 1998.
  54. 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): 82-89, 1997.
  55. 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.

- 
56. Burridge JH, Taylor PN, Hagan SA, Swain ID. Experience of the clinical use of the Odstock Drop Foot Stimulator. *Artificial Organs* 21(3): 254-260, 1997.
  57. Burridge JH, Taylor PN, Hagan SA, Swain ID. The Odstock Dropped Foot Stimulator: preliminary results of a randomised trial and clinical experience (abstract). *Artificial Organs*, 20(11): 1244, 1996.
  58. Burridge J, Taylor PN, Swain ID. Experience of clinical use of the Odstock Dropped Foot Stimulator (ODFS). *5<sup>th</sup> International Workshop on FES*, (ISBN 3-900928-03-7), pp. 367-370, Vienna, Austria, 1995.
  59. Taylor PN, Burridge JH. Development and experience in the use of an electronic stimulator for correction of foot drop in early gait re-education of subjects following CVA. *Therapy Weekly*, 1993.

## Other papers about the ODFS

1. Goodison W, Baron F, Seary C, Murphy E, Lachmann R, Stevenson VL. Functional electrical stimulation to aid walking in patients with adrenomyeloneuropathy: A case study and observational series. *JIMD Reports*. 2021; 1-8. doi:10.1002/jmd2.12254
2. 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. doi: 10.1177/0269215519837326. [Epub ahead of print]
3. Renfrew LM, Paul L, McFadyen A, Rafferty D, Moseley O, Lord AC, Bowers R, Mattison P. The clinical- and 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. [Epub ahead of print] PMID: 30974955
4. Renfrew ML, Flowers P, Lord AC, Rafferty D, McFadyen AK, Bowers R, Mattison P, Paul L. An exploration of the experiences and utility of functional electrical stimulation for foot drop in people with multiple sclerosis. *Disabil Rehabil*. 2018 Oct 9:1-9. doi: 10.1080/09638288.2018.1501100. [Epub ahead of print]
5. Hare N, Georgopoulos P, Philips KE, Johnson JE, Seary C, Panicker JN, Stevenson VL. Improvement in overactive bladder symptoms in patients using functional electrical stimulation of the common peroneal nerve for walking. *Clin Rehabil*. 2018 Oct;32(10):1357-1362. doi: 10.1177/0269215518780974. Epub 2018 Jun 17.
6. Miller Renfrew L, Lord AC, McFadyen AK, Rafferty D, Hunter R, Bowers , Mattison P, Moseley O, Paul L. A comparison of the initial orthotic effects of functional electrical stimulation and ankle-foot orthoses on the speed and oxygen cost of gait in multiple sclerosis. *J Rehabil Assist Technol Eng*. 2018 Feb 2;5:2055668318755071. doi: 10.1177/2055668318755071. eCollection 2018 Jan-Dec
7. L. Miller, D. Rafferty, L. Paul, and P. Mattison. The impact of walking speed on the effects of functional electrical stimulation for foot drop in people with multiple sclerosis. *Disabil Rehabil Assist Technol*. 2015 Mar 31:1-6. [Epub ahead of print]
8. Linda Miller, Danny Rafferty, Lorna Paul, and Paul Mattison A comparison of the orthotic effect of the Odstock Dropped Foot Stimulator and the Walkaide functional electrical stimulation systems on energy cost and speed of walking in Multiple Sclerosis. 2015 *Disabil Rehabil Assist Technol*, Early Online. ISSN 1748-3107 print/ISSN 1748-3115 online, DOI: 10.3109/17483107.2014.898340
9. van der Linden ML, Hooper JE, Cowan P, Weller BB, Mercer TH (2014) Habitual Functional Electrical Stimulation Therapy Improves Gait Kinematics and Walking Performance, but Not Patient-Reported Functional Outcomes, of People with Multiple Sclerosis who Present with Foot-Drop. *PLoS ONE* 9(8): e103368. doi:10.1371/journal.pone.0103368

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10. van der Linden ML, Scott SM, Hooper JE, Cowan P, Mercer TH. Gait kinematics of people with Multiple Sclerosis and the acute application of Functional Electrical Stimulation. *Gait Posture* (2014), <http://dx.doi.org/10.1016/j.gaitpost.2014.01.016>
  11. van der Linden M, Hooper J, Mercer T. Functional Electrical Stimulation to treat foot drop for people with MS; user perception of benefit, disadvantages and service provision in Edinburgh. *Multiple Sclerosis Journal* 2014;20:(7) 999
  12. Scott SM, van der Linden ML, Hooper JE, Cowan P, Mercer TH. Quantification of gait kinematics and walking ability of people with multiple sclerosis who are new users of functional electrical stimulation. *J Rehabil Med.* 2013 Apr;45(4):364-9. doi: 10.2340/16501977-1109
  13. Pratt E, van der Meulen J, Reeves M, Heller BW, Good TR. The development, preliminary validation and clinical utility of a shoe model to quantify foot and footwear kinematics in 3-D. *Gait and posture*. July 2012 Volume 36, Issue 3, Pages 434–438
  14. Salisbury L, Shiels J, Todd I, Dennis M. A feasibility study to investigate the clinical application of functional electrical stimulation (FES), for dropped foot, during the sub-acute phase of stroke - A randomized controlled trial. *Physiother Theory Pract.* 2013 Jan;29(1):31-40. doi: 10.3109/09593985.2012.674087. Epub 2012 Apr 23.
  15. Wilkie KM, Shiels JE, Bulley C, and Salisbury LG "Functional electrical stimulation (FES) impacted on important aspects of my life"—A qualitative exploration of chronic stroke patients' and carers' perceptions of FES in the management of dropped foot. *Physiotherapy Theory and Practice*, 2011, Early Online, 1–9 ISSN: 0959-3985 print/1532-5040 online DOI: 10.3109/09593985.2011.563775
  16. Bulley C, Shiels J, Wilkie K, Salisbury L. User experiences, preferences and choices relating to functional electrical stimulation and ankle foot orthoses for foot-drop after stroke. *Physiotherapy*. 2011 Sep;97(3):226-33. doi: 10.1016/j.physio.2010.11.001. Epub 2011 Feb 2.
  17. Shiels J, Wilkie K, Bulley C, Smith S, Salisbury L. A mixed methods service evaluation of a pilot functional electrical stimulation clinic for the correction of dropped foot in patients with chronic stroke. *Prim Health Care Res Dev.* 2011 Jul;12(3):187-99. doi: 10.1017/S1463423611000016.
  18. Falkonakis A. (2009) Use of functional electrical stimulation (FES) in the treatment of drop-foot in patients with upper motor neuron lesions. *Themata Fysikotherapeias*, 5 (7): 48-54.
  19. Sheffler LR, Bailey SN, Chae J. Spatiotemporal and kinematic effect of peroneal nerve stimulation versus an ankle-foot orthosis in patients with multiple sclerosis: a case series. *PM R.* 2009 Jul;1(7):604-11
  20. Sheffler LR, Hennessey MT, Knutson JS, Chae J. Neuroprosthetic effect of peroneal nerve stimulation in multiple sclerosis: a preliminary study. *Arch Phys Med Rehabil.* 2009 Feb;90(2):362-5.

21. Sheffler LR, Hennessey MT, Knutson JS, Naples GG, Chae J. Functional Effect of an Ankle Foot Orthosis on Gait in Multiple Sclerosis: A Pilot Study. 87(1):26-32, January 2008
22. L Paul, D Rafferty, S Young, L Miller, P Mattison and A McFadyen. The effect of functional electrical stimulation on the physiological cost of gait in people with multiple sclerosis *Mult Scler* 2008; 14; 954 originally published online Jun 23, 2008; <http://msj.sagepub.com/cgi/content/abstract/14/7/954>
23. van der Linden ML,. Hazlewood E, , Hillman SJ and Robb JE. Functional Electrical Stimulation to the Dorsiflexors and Quadriceps in Children with Cerebral Palsy. *Pediatr Phys Ther* 2008;20:23–29)
24. Sheffler LR, Hennessey MT, Naples GG, Chae J. Improvement in functional ambulation as a therapeutic effect of peroneal nerve stimulation in hemiplegia: two case reports. *Neurorehabil Neural Repair*. 2007 Jul-Aug;21(4):366-9. Epub 2007 Mar 16.
25. Sheffler LR, Hennessey MT, Naples GG, Chae J. Peroneal nerve stimulation versus an ankle foot orthosis for correction of footdrop in stroke: impact on functional ambulation. *Neurorehabil Neural Repair*. 2006 Sep;20(3):355-60.
26. Findlow A, Kenney L, Howard D. Can alternatives to the forceplate be used for accurate detection of key gait events?. Proc 9th Annual IFESS Conference, Bournemouth, UK, 2004, 156-1581.

## A list of references relating to the Finetech implanted dropped foot stimulator STIMuSTEP

1. Taylor PN, Wilkinson Hart IA, Khan MS, Slade-Sharman DWM. The Correction of Dropped Foot Due to Multiple Sclerosis Using the STIMuSTEP Implanted Dropped Foot Stimulator. International Journal of MS Care Preprint. Online First: <http://ijmsc.org/doi/10.7224/1537-2073.2015-038>
2. Taylor PN, Wilkinson Hart IA, Khan MS, Slade-Sharman DEM. The Correction of Dropped Foot Due to Multiple Sclerosis using the STIMuSTEP Implanted Dropped foot Stimulator. IJMSC in press Dec 2015
3. Kenney LPJ, Hermens H, Francis D, Bultstra G, Holsheimer J, Verloop A. Encapsulation materials for implantable FES systems; a case study in *Proc. 5<sup>th</sup> International Functional Electrical Stimulation Society Conference, Aalborg, Denmark 2000*: 313-316.
4. Kenney LPJ, Hermens H, Hekman E, Bultstra G, Nester C. Sensitivity to typical transmitter misalignment errors in an implantable peroneal nerve stimulator in *Proc. 5<sup>th</sup> International Functional Electrical Stimulation Society Conference, Aalborg, Denmark, 2000*: 317-320.
5. Van der Aa H, Buschman HE, Bulstra G, Verloop A, Kenney L. Application of a dual channel peroneal nerve stimulator in a patient with a “central” drop foot. In *Proc XIIth World Federation of Neurosurgical Societies, Sydney Australia 2001*: 103
6. Kenney LPJ, Bultstra G, Buschman R, Taylor P, Mann G. Initial results from two trials of an implantable two channel drop foot stimulator in *Proc 7<sup>th</sup> Vienna Workshop on Functional Electrical Stimulation, Vienna, Austria, 2001*: 192-195
7. Kenney LPJ, Bultstra G, Buschman R, Taylor P, Mann G. A novel two-channel implanted drop foot stimulator – initial clinical results. In *Proc 1<sup>st</sup> Salford International conference on Biomechanics of the Lower Limb in Health, Disease, and Rehabilitation, Salford, UK, 2001*:62-63
8. Hutten AIR, Bultstra G, Buschman R, Kenney L et al. The sensitivity and selectivity of an implantable 2-channel peroneal nerve stimulator system for restoration of dropped-foot. In *Proc. 7th International Functional Electrical Stimulation Society Conference, Ljubljana, Slovenia 2002*: 183-185
9. Kenney L, Bultstra G, Buschman R, Taylor P, Mann G, Hermens H et al. An implantable two channel drop foot stimulator: initial clinical results. *Artif.Organs* 2002;**26**:267-70.
10. van der Aa HE, Bultstra G, Verloop AJ, Kenney LPJ, Holsheimer J, Nene A et al. Application of a dual channel peroneal nerve stimulator in a patient with a central drop foot. *Acta Neurochir Suppl* 2002;**79**:105-7.

11. Taylor PN, Mann GE, Wood DE, Hobby JE. Pilot study to evaluate the safety and efficacy of an implanted dropped foot stimulator (IMPULSE). *1<sup>st</sup> FESnet Conference*, pp. 54-56, Glasgow, UK, September 2002.
12. Wood DE, Taylor PN, Mann GE, Hobby JE. Isometric joint moments from an implanted drop foot stimulator. *1<sup>st</sup> FESnet Conference*, pp. 94-96, Glasgow, UK, September 2002.
13. Kenney L, Taylor P, Mickelborough J, Mann G, Hobby J. Progress on research, development and clinical evaluation of an implantable drop foot stimulator. In *Conf Programme of Recent Advances in Assistive Technology 2002, Birmingham UK, 2002*: 25
14. Taylor PN, Mann GE, Wood DE, Hobby J. Pilot study to evaluate the safety and efficacy of an implanted dropped foot stimulator (IMPULSE). *8<sup>th</sup> Annual Conference of the International FES Society*, pp. 168-172, Queensland, Australia, July 2003.
15. Kottink AIR, Buschman HPJ, Kenney LPJ, Veltink P, Slycke P, Bultstra G, Hermens HJ. The sensitivity and selectivity of an implantable two-channel peroneal nerve stimulator system for restoration of dropped foot. *Neuromodulation* 2004; 7(4): 277-283
16. Kottink, A.I., et al., The orthotic effect of functional electrical stimulation on the improvement of walking in stroke patients with a dropped foot: a systematic review. *Artif Organs*, 2004. 28(6): p. 577-86.
17. Kottink AI, Hermens HJ, Nene AV, Tenniglo MJ, van der Aa HE, Buschman HP, Ijzerman MJ A randomized controlled trial of an implantable 2-channel peroneal nerve stimulator on walking speed and activity in poststroke hemiplegia. *Arch Phys Med Rehabil*. 2007 Aug;88(8):971-8.
18. Kottink AIR, Tenniglo MJB, de Vries WHK, Hermens HJ, Buirke JH .Effects of an implantable two -channel peroneal nerve stimulator versus conventional walking device on spatiotemporal parameters and kinematics of hemiparetic gait. *J Rehabil Med* 2012; 44: 51–57
19. Taylor P, Wilkinson I, Kwan I, Humphreys L, Slade-Sharman D, Khan M and Hobby J. Clinical Experience of the STIMuSTEP Implanted Dropped Foot Stimulator in chronic stroke UK Stroke Forum Harrogate 2012
20. Taylor P, Wilkinson I. L Kwan, Humphreys L, Slade-Sharman D, Khan M and Hobby J Clinical Experience of the STIMuSTEP Implanted Dropped Foot Stimulator. International Functional Electrical Stimulation Society Meeting, Banff, Sept 2012
21. Taylor P, Wilkinson I, Samuel V, L Kwan, Humphreys L, Slade-Sharman D, Khan M and Hobby J.A comparison of external and implanted EFS for correction of dropped foot. An audit of the STIMuSTEP service in Salisbury. 4th Annual Conference of the International Functional Electrical Stimulation Society (UK and Ireland Chapter) April 2013 - Southampton, UK



22. Taylor P, Wilkinson I, Slade-Sharman D, Khan M. A comparison of external and implanted FES for the correction of dropped foot in MS. *Multiple Sclerosis Journal* 2014;20:(7) 1001

## Other dropped foot references

1. Liberson, WT; Holmquest, HJ; Scot, D; et al (1961) Functional electrotherapy: Stimulation of the peroneal nerve synchronized with the swing phase of gait of hemiplegic patients. *Archives of Physical Medicine and Rehabilitation*, 42:101-105.
2. Waters RL, McNeal D and Perry J. Experimental Correction of Footdrop by Electrical Stimulation of the Peroneal Nerve vol. 57.a, no. 8, december 1975 1047
3. Bliss, TVP and Lomo, T (1973) Long-lasting potentiation of synaptic transmission in the dentate area of the anaesthetized rabbit following stimulation of the perforant path. *Journal of Physiology*, 232, 331-356.
4. Knutsson, E & Richards, C (1979) Different types of disturbed motor control in gait of hemiparetic patients. *Brain*, 102: 405-430.
5. Merletti, R; Andina, A; Galante, M; et al (1979) Clinical experience of electronic peroneal stimulators in 50 hemiparetic patients. *Scandinavian Journal of Rehabilitative Medicine*, 11:111-121.
6. Apkarian, JA & Naumann, S (1991) Stretch reflex inhibition using electrical stimulation in normal subjects and subjects with spasticity. *Journal of Biomedical Engineering*, 13: 67-73.
7. Crone C, Nielsen J, Petersen N, Ballegaard M and Hultborn H. Disynaptic reciprocal inhibition of ankle extensors in spastic patients. *Brain* (1994) 117, 1161-1168
8. Carnstam, B; Larsson, L-E & Prevec, TS (1997) Improvement in gait following functional electrical stimulation: Investigations on changes in voluntary strength and proprioceptive reflexes. *Scandinavian Journal of Rehabilitative Medicine*, 9: 7-13.
9. Cozean, CD; Pease, WS & Hubbell, SL (1988) Biofeedback and functional electrical stimulation in stroke rehabilitation. *Archives of Physical Medicine and Rehabilitation*, 69: 401-405.
10. Granat, MH; Maxwell, DJ; Ferguson, ACB; et al (1996) Peroneal stimulator: Evaluation for the correction of spastic drop foot in hemiplegia. *Archives of Physical Medicine and Rehabilitation*, 77: 19-24.
11. Barker, LL; Wederich, CL; McNeal, DR; et al (2000) *Neuromuscular Electrical Stimulation: A Practical Guide*. 4<sup>th</sup> edition. Downey, CA: Los Amigos Research & Education Institute Inc.
12. Lyons, GM; Sinkjaer, T; Burridge, JH; et al (2002) A review of portable FES-based neural orthoses for the correction of drop foot. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 10(4): 260-279.

13. Mirbagheri MM, Ladouceur M, Barbeau H, Kearney RE. The effects of long-term FES-assisted walking on intrinsic and reflex dynamic stiffness in spastic spinal-cord-injured subjects. *IEEE Trans Neural Syst Rehabil Eng.* 2002 Dec;10(4):280-9
14. Kido Thompson, A. & Stein, RB. (2004) Short-term effects of functional electrical stimulation on motor-evoked potentials in ankle flexor and extensor muscles. *Experimental Brain Research* 159 (4): 491-500.
15. Kottink, AL.; Oostendorp, LJ.; Buurke, JH.; et al (2004) The orthotic effect of functional electrical stimulation on the improvement of walking in stroke patients with a dropped foot: a systematic review. *Artificial Organs*, 28(6):577-86.
16. O'Halloran T, Haugland M, Lyons GM, Sinkjær T. An Investigation of the Effect of Modifying Stimulation Profile Shape on the Loading Response Phase of Gait, during FES-Corrected Drop Foot: Stimulation Profile and Loading Response. *Neuromodulation*, Volume 7, Number 2, 2004 113–125
17. Wilkinson IA, Taylor PN. Retrospective study of patients using Functional Electrical Stimulation for drop foot correction and increased hip stability. 9th Annual Conference of the International FES Society and 2nd FESnet Conference, (ISBN 1-85899-191-9), pp. 305-307, Bournemouth, UK, September 2004
18. Kim CM, Eng JE, Whittaker MW. Effects of a simple functional electrical system and/or a hinged AFO on walking in individuals with incomplete spinal cord injury. *Arch Phys Med Rehabil.* 2004 October ; 85(10): 1718–1723.
19. Yan, T.; Hui-Chan, CWY. & Li, LSW. (2005) Functional electrical stimulation improves motor recovery of the lower extremity and walking ability of subjects with first acute stroke: A randomised placebo-controlled trial. *Stroke*, 36(1): 80-85.
20. Hart DJ, Taylor PN, Chappell PH, Wood DE. A microcontroller system for investigating the catch effect: functional electrical stimulation of the common peroneal nerve. *Medical Engineering and Physics*, 28(5): 438-448, 2006.
21. Robbins SM, Houghton PE, Woodbury G, Brown JL, The Therapeutic Effect of Functional and Transcutaneous Electric Stimulation on Improving Gait Speed in Stroke Patients: A Meta-Analysis *Arch Phys Med Rehabil* Vol 87, June 2006
22. Stein RBCS, Everaert DC Rolf R, et al. A multicenter trial of a footdrop stimulator controlled by a tilt sensor. *Neurorehabil neural repair* 2006;20:371-379
23. Hausdorff JM, Ring H. Effects of a new radio frequency-controlled neuroprosthesis on gait symmetry and rhythmicity in patients with chronic hemiparesis. *Am J Phys Med Rehabil* 2008;87:4-13
24. Laufer Y, Ring H, Sprecher E, Hausdorff JM, Gait in individuals with chronic hemipareses: one-year follow-up of the effects of a neuroprosthetic that ameliorates the foot. *J Neurol Phys Ther* 2009;33:104-110

25. Stein RB, Everaert DG, Thompson AK, Chong SL, Whittaker M, Robertson J, Kuether G. Long-term therapeutic and orthotic effects of a foot drop stimulator on walking performance in progressive and nonprogressive neurological disorders. *Neurorehabil Neural Repair.* 2010 Feb;24(2):152-67. Epub 2009 Oct 21.
26. Laufer Y, Hausdorff J, Ring H. The effects of a foot drop neuroprosthesis on functional ability, social participation and gait velocity. *Am J Phys Med Rehabil* 2009;88:14-20
27. Ring H, Treger I, Gruendlinger L, Hausdorff JM. Neuroprasthesia for footdrop compared with an ankle-foot orthosis:effects on postural control during walking. *J Stroke Cerebrovasc Dis* 2009 18:41-47
28. Thompson AK, Estabrooks KL, Chong SL, and Stein RB. Spinal Reflexes in Ankle Flexor and Extensor Muscles After Chronic Central Nervous System Lesions and Functional Electrical Stimulation. *Neurorehabilitation and Neural Repair* Volume 23 Number 2 February 2009 133-142
29. Everaert DG, Thompson AK, Chong SL, Stein RB. Does functional electrical stimulation for foot drop strengthen corticospinal connections? *Neurorehabil Neural Repair.* 2010 Feb;24(2):168-77. Epub 2009 Oct 27.
30. Kesar TM, Perumal R, Jancosko A, Reisman DS, Rudolph KS, Higginson JS, Binder-Macleod SA. Novel patterns of functional electrical stimulation have an immediate effect on dorsiflexor muscle function during gait for people poststroke. *Phys Ther.* 2010 Jan;90(1):55-66. doi: 10.2522/ptj.20090140. Epub 2009 Nov 19.
31. Roche A, O' Laighin G and Coote S Surface-applied functional electrical stimulation for orthotic and therapeutic treatment of drop-foot after stroke – a systematic review *Physical Therapy Reviews* 2009 VOL 14 NO 2 63-80
32. Kesar TM, Perumal R, JancoskoA, Reisman DS, Rudolph KS, Higginson JS, Binder-Macleod SA Novel Patterns of Functional Electrical Stimulation Have an Immediate Effect on Dorsiflexor Muscle Function During Gait for People Poststroke. *Physical Therapy* January 2010 Volume 90 Number 1.
33. Stevens P, Hunsaker RB. Recent Findings Regarding the Efficacy of functional electrical stimulation in patients with chronic hemiplegia and multiple sclerosis: a narrative literature review. *J Prosthet Orthot.* 2010;22:166-171
34. Sabut SK, Sikdar C, Mondal R, Kumar R & Mahadevappa M. Restoration of gait and motor recovery by functional electrical Stimulation therapy in persons with stroke. *Disability and rehabilitation*, 2010; early online, 1–10
35. Sabut SK, Kumar R, Mahadevappa M. Design of an insole embedded foot pressure sensor controlled FES system for foot drop in stroke patients. *Proceedings of 2010 International Conference on Systems in Medicine and Biology* 16-18 December 2010, IIT Kharagpur, India

36. van Swigchem R, Vloothuis J, den Boer J. Is transcutaneous peroneal stimulation beneficial to patients with chronic stroke using an ankle-foot orthosis? A within-subjects study of patients' satisfaction, walking Speed and physical activity level. *J Rehabil Med* 2010; 42: 117–121
37. S. K. Sabut, C. Sikdar, R. Kumar, and M. Mahadevappa Improvement of Gait & Muscle Strength with Functional Electrical Stimulation in Sub-acute & Chronic Stroke Patients 33rd Annual International Conference of the IEEE EMBS Boston, Massachusetts USA, August 30 - September 3, 2011
38. van Swigchem R, van Duijnhoven HJR, den Boer J, Geurts AC, van Swigchem R, Weerdesteyn V, van Duijnhoven HJ, den Boer J, Beems T, Geurts AC. Near-Normal Gait Pattern With Peroneal Electrical Stimulation as a Neuroprosthesis in the Chronic Phase of Stroke: A Case Report. *Arch Phys Med Rehabil* Vol 92, February 2011
39. Courtney AM, Castro-Borrero W, Davis SL, Frohman TC and Frohman EM. Functional treatments in multiple sclerosis. *Current Opinion in Neurology* 2011, 24:250–254
40. van Swigchem R, Hanneke J.R, van Duijnhoven HJR, den Boer J, Geurts AC, Weerdesteyn V. Effect of Peroneal Electrical Stimulation Versus an Ankle-Foot Orthosis on Obstacle Avoidance Ability in People With Stroke-Related Foot Drop. *PHYS THER.* 2012; 92:398-406
41. Schuhfried O, Crevenna R, Fialka-Moser V, Paternostro-Sluga T.ON-INVASIVE NEUROMUSCULAR ELECTRICAL STIMULATION IN PATIENTS WITH CENTRAL NERVOUS SYSTEM LESIONS: AN EDUCATIONAL REVIEW. *J REHABIL MED* 2012; 44: 99–105
42. Pereira S, Mehta S, McIntyre A, Lobo L, Teasell RW. Functional electrical stimulation for improving gait in persons with chronic stroke. *Top Stroke Rehabil.* 2012 Nov-Dec;19(6):491-8. doi: 10.1310/tsr1906-491.
43. Kim JH, Chung Y, Kim Y, Hwang S. Functional electrical stimulation applied to gluteus medius and tibialis anterior corresponding gait cycle for stroke. *Gait Posture.* 2012 May;36(1):65-7. doi: 10.1016/j.gaitpost.2012.01.006. Epub 2012 Mar 4.
44. Prosser LA, Curatalo LA, Alter KE, Damiano DI. Acceptability and potential effectiveness of a foot drop stimulator in children and adolescents with cerebral palsy Article first published online: 27 AUG 2012 DOI: 10.1111/j.1469-8749.2012.04401.x
45. Heller BW, Alison J. Clark AJ, Good TR, Healey TJ, Naird S, Pratt EJ, Reeves ML, van der Meulenc JM, Barker AB. Automated setup of functional electrical stimulation for drop foot using a novel 64 channel prototype stimulator and electrode array: Results from a gait-lab based study. *Med Eng Phys* (2012), <http://dx.doi.org/10.1016/j.medengphy.2012.03.012>
46. Springer S, Vatine JJ, Lipson R, Wolf A, and Laufer Y Effects of Dual-Channel Functional Electrical Stimulation on Gait Performance in Patients with HemiparesisThe ScientificWorld Journal Volume 2012, Article ID 530906, 8 pages doi:10.1100/2012/530906

47. Meilahn JR Tolerability and Effectiveness of a Neuroprosthesis for the Treatment of Footdrop in Pediatric Patients With Hemiparetic Cerebral Palsy 2013 American Academy of Physical Medicine and Rehabilitation 1934-1482/13/ <http://dx.doi.org/10.1016/j.pmrj.2012.11.005>
48. Kluding PM, Dunning K, O'Dell MW, Wu SS, Ginosian J, Feld J, McBride K. Foot Drop Stimulation Versus Ankle Foot Orthosis After Stroke: 30-Week Outcomes. *Stroke*. 2013 May 2. [Epub ahead of print]
49. Graham J The management and treatment of foot drop in stroke. *British Journal of Neuroscience Nursing* March 2013 Vol 9 No 1
50. Everaert DG, Stein RB, Abrams GM, Dromerick AW, Francisco GE, Hafner BJ, Huskey TN, Munin MC, Nolan KJ, Kufta CV. Effect of a foot-drop stimulator and ankle-foot orthosis on walking performance after stroke: a multicenter randomized controlled trial. *Neurorehabil Neural Repair*. 2013 Sep;27(7):579-91. doi: 10.1177/1545968313481278. Epub 2013 Apr 4.
51. S. Khurana, T. Ference, A. Beranger. Comparison of functional electric stimulation neuroprosthesis and ankle foot orthosis in persons with multiple sclerosis. 26th ECTRIMS congress & 15th RIMS meeting 2013
52. Wening J, Ford J, Jouett D. Orthotic and FES for maintenance of walking in patients with MS. *Disease-a-Month* 59 (2013) 284-2894
53. Flisher L, Norman S, Wilkinson H, Seary C, Stevenson V. The sustained benefit of lower limb functional electrical stimulation in people with multiple sclerosis. *Multiple Sclerosis Journal* 2014;20:(7) 1004
54. Bethoux F, Rogers HL, Nolan KJ, Abrams GM, Annaswamy TM, Brandstater M, Browne B, Burnfield JM, Feng W, Freed MJ, Geis C, Greenberg J, Gudesblatt M, Ikramuddin F, Jayaraman A, Kautz SA, Lutsep HL, Madhavan S, Meilahn J, Pease WS, Rao N, Seetharama S, Sethi P, Turk MA, Wallis RA, Kufta C. The Effects of Peroneal Nerve Functional Electrical Stimulation Versus Ankle-Foot Orthosis in Patients With Chronic Stroke: A Randomized Controlled Trial. *Neurorehabil Neural Repair*. 2014 Feb 13. [Epub ahead of print]
55. O'Dell MW, Dunning K, Kluding P, Wu SS, Feld J, Ginosian J, McBride K. Response and Prediction of Improvement in Gait Speed From Functional Electrical Stimulation in Persons With Post stroke Drop Foot, DPTPM R 2014;6:587-601 <http://dx.doi.org/10.1016/j.pmrj.2014.01.001>
56. Downing A, Van Ryn D, Fecko A, Aiken C, McGowan S, Sawers S, McInerny T, Moore K, Passariello L, Rogers H. Effect of a 2-Week Trial of Functional Electrical Stimulation on Gait Function and Quality of Life in People with Multiple Sclerosis. *Int J MS Care*. 2014;16:146–152.
57. Bosch PR, Harris JE, Wing K. Review of Therapeutic Electrical Stimulation for Dorsiflexion Assist and Orthotic Substitution From the American Congress of

Rehabilitation Medicine Stroke Movement Interventions Subcommittee  
Archives of Physical Medicine and Rehabilitation 2014;95:390-6

58. Shendkar CV, Lenka PK, Biswas A, Kumar R, Mahadevappa M. Therapeutic effects of functional electrical stimulation on gait, motor recovery, and motor cortex in stroke survivors. Hong Kong Physiotherapy Journal (2014) xx, 1e11
59. Howlett OA, Lannin NA, Ada L, McKinstry C, Functional Electrical Stimulation improves activity after stroke: a systematic review with meta-analysis. Archives of Physical Medicine and Rehabilitation 2015;96:934-43
60. Dapul GP, Bethoux F. Functional Electrical Stimulation for Foot Drop in Multiple Sclerosis. US Neurology, 2015;11(1):10–8 DOI: 10.17925/USN.2015.11.01.10
61. Bethoux F, Rogers HL, Nolan KJ, Abrams GM, Annaswamy T, Brandstater M, Browne B, Burnfield JM, Feng W, Freed MJ, Geis C, Greenberg J, Gudesblatt M, Ikramuddin F, Jayaraman A, Kautz SA, Lutsep HL, Madhavan S, Meilahn J, Pease WS, Rao N, Seetharama S, Sethi P, Turk MA, Wallis RA, Kufta. Long-Term Follow-up to a Randomized Controlled Trial Comparing Peroneal Nerve Functional Electrical Stimulation to an Ankle Foot Orthosis for Patients With Chronic Stroke. Neurorehabil Neural Repair. 2015 Feb 4. pii: 1545968315570325. [Epub ahead of print]
62. Nolan KJ, Yarossia M, McLaughlin P. Changes in center of pressure displacement with the use of a foot drop stimulator in individuals with stroke. Clinical Biomechanics Volume 30, Issue 7, August 2015, Pages 755–761
63. Dunning K, O\_Dell MW, Kluding P, McBride K: Peroneal stimulation for foot drop after stroke: a systematic review. Am J Phys Med Rehabil 2015;00:00Y00.
64. Shiotani M, Watanabe T. A basic study on quantitative evaluation of 3-dimensional foot contact with an inertial sensor for FES foot drop correction. Conf Proc IEEE Eng Med Biol Soc. 2015;2015:6684-7. doi: 10.1109/EMBC.2015.7319926.
65. Prenton S, Hollands KL, Kenney LP. Functional electrical stimulation versus ankle foot orthoses for foot-drop: A meta-analysis of orthotic effects. J Rehabil Med. 2016 Oct 5;48(8):646-656. doi: 10.2340/16501977-2136.
66. Khurana SR1, Beranger AG, Felix ER. Perceived Exertion Is Lower When Using a Functional Electrical Stimulation Neuroprosthesis Compared With an Ankle-Foot Orthosis in Persons With Multiple Sclerosis: A Preliminary Study. Am J Phys Med Rehabil. 2017 Mar;96(3):133-139. doi: 10.1097/PHM.0000000000000626.
67. Seel T, Werner C, Schauer T. The adaptive drop foot stimulator - Multivariable learning control of foot pitch and roll motion in paretic gait. Med Eng Phys. 2016 Nov;38(11):1205-1213. doi: 10.1016/j.medengphy.2016.06.009. Epub 2016 Jul 7.
68. Kenney LP, Heller BW, Barker AT, Reeves ML, Healey J, Good TR, Cooper G, Sha N, Prenton S, Liu A, Howard D. A review of the design and clinical evaluation of the ShefStim array-based functional electrical stimulation

- system. *Med Eng Phys.* 2016 Nov;38(11):1159-1165. doi: 10.1016/j.medengphy.2016.08.005. Epub 2016 Sep 14.
69. Laursen CB, Nielsen JF, Andersen OK, Spaich EG. Feasibility of Using Lokomat Combined with Functional Electrical Stimulation for the Rehabilitation of Foot Drop. *Eur J Transl Myol.* 2016 Aug 5;26(3):6221. eCollection 2016 Jun 13.
70. Miller L, McFadyen A, Lord AC, Hunter R, Paul L, Rafferty D, Bowers R, Mattison P. Functional Electrical Stimulation for Foot Drop in Multiple Sclerosis: A Systematic Review and Meta-Analysis of the Effect on Gait Speed. *Arch Phys Med Rehabil.* 2017 Jul;98(7):1435-1452. doi: 10.1016/j.apmr.2016.12.007. Epub 2017 Jan 11.
71. Springer S, Khamis S Effects of functional electrical stimulation on gait in people with multiple sclerosis - A systematic review. *Mult Scler Relat Disord.* 2017 Apr;13:4-12. doi: 10.1016/j.msard.2017.01.010. Epub 2017 Jan 18.
72. Sardaru DP, Matei D, Zaharia-Kezdi D, Pendefunda L. Effects of biofeedback versus switch-triggered functional electrical stimulation on sciatica-related foot drop. *J Back Musculoskelet Rehabil.* 2018;31(2):239-245. doi: 10.3233/BMR-169578.
73. Sharif F, Ghulam S, Malik AN, Saeed Q. Effectiveness of Functional Electrical Stimulation (FES) versus Conventional Electrical Stimulation in Gait Rehabilitation of Patients with Stroke. *J Coll Physicians Surg Pak.* 2017 Nov;27(11):703-706. doi: 2747.
74. Dujović SD, Malešević J, Malešević N, Vidaković AS, Bijelić G, Keller T, Konstantinović L. Novel multi-pad functional electrical stimulation in stroke patients: A single-blind randomized study. *NeuroRehabilitation.* 2017;41(4):791-800. doi: 10.3233/NRE-172153.
75. Andreopoulou G, Mercer TH, van der Linden ML. Walking measures to evaluate assistive technology for foot drop in multiple sclerosis: A systematic review of psychometric properties. *Gait Posture.* 2018 Mar;61:55-66. doi: 10.1016/j.gaitpost.2017.12.021. Epub 2017 Dec 25
76. Sota K1, Uchiyama Y, Ochi M, Matsumoto S, Hachisuka K, Domen K. Examination of Factors Related to the Effect of Improving Gait Speed With Functional Electrical Stimulation Intervention for Stroke Patients. *PM R.* 2018 Aug;10(8):798-805. doi: 10.1016/j.pmrj.2018.02.012. Epub 2018 Mar 6.
77. Berenpas F, Schiemannck S, Beelen A, Nollet F, Weerdesteijn V, Geurts A. Kinematic and kinetic benefits of implantable peroneal nerve stimulation in people with post-stroke drop foot using an ankle-foot orthosis. *Restor Neurol Neurosci.* 2018;36(4):547-558. doi: 10.3233/RNN-180822.
78. Prenton S, Hollands KL, Kenney LPJ, Onmanee P. Functional electrical stimulation and ankle foot orthoses provide equivalent therapeutic effects on foot drop: A meta-analysis providing direction for future research. *J Rehabil Med.* 2018 Feb 13;50(2):129-139. doi: 10.2340/16501977-2289. Review.
79. Karniel N, Raveh E, Schwartz I, Portnoy S. Functional electrical stimulation compared with ankle-foot orthosis in subacute post stroke patients with foot

- drop: A pilot study. *Assist Technol.* 2019 Apr 4:1-8. doi: 10.1080/10400435.2019.1579269. [Epub ahead of print.]
80. Miller Renfrew L, Lord AC, Warren J, Hunter R. Evaluating the Effect of Functional Electrical Stimulation Used for Foot Drop on Aspects of Health-Related Quality of Life in People with Multiple Sclerosis: A Systematic Review. *Int J MS Care.* 2019 Jul-Aug;21(4):173-182. doi: 10.7224/1537-2073.2018-015.
81. Davies-Smith A, Prokopiushova T, Jones R, Burge T and Rasov K. Functional electrical stimulation for foot drop in people with multiple sclerosis: The relevance and importance of addressing quality of movement. *2020 Multiple Sclerosis Journal* 1–8 DOI: 10.1177/1352458520923958
82. Guryanova E.A., Kiryanova V.V. The Effectiveness of Functional Stimulation in Multiple Sclerosis (Literature Review). *Bulletin of Rehabilitation Medicine.* 2020; 5 (99): 107-119. <https://doi.org/10.38025/2078-1962-2020-99-5-107-119>
83. Jaqueline da Cunha M, Rech KD, Salazar AP, Pagnussat AS. Functional electrical stimulation of the peroneal nerve improves post-stroke gait speed when combined with physiotherapy. A systematic review and meta-analysis. *Ann Phys Rehabil Med.* 2021;64(1):101388

## Guidelines

1. <http://www.nice.org.uk/Guidance/IPG278> Functional electrical stimulation for drop foot of central neurological origin N1733 1P ISBN 84629-846-6 Jan 09
2. <http://www.nice.org.uk/Guidance/IPG278> Treating drop foot using electrical stimulation N1734 1P ISBN 1-84629-847-4 Jan 09
3. 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>
4. Evidence Note 46 - The use of functional electrical stimulation (FES) in adults with dropped foot. Quality Improvement Scotland, 2012 [http://www.healthcareimprovementscotland.org/our\\_work/medicines\\_and\\_technology/shtg\\_-\\_evidence\\_notes/evidence\\_note\\_46.aspx](http://www.healthcareimprovementscotland.org/our_work/medicines_and_technology/shtg_-_evidence_notes/evidence_note_46.aspx)
5. Scottish Interventional Guidance Network (SIGN 118) The Scottish Interventional Guidance Network report (2010); Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning. A national clinical guideline. www.sign.ac.uk ISBN 978 1 905813 63 6
6. Intercollegiate working party for stroke, (2012) *National clinical guidelines for stroke* London, Royal College of Physicians 4<sup>th</sup> edition ISBN 978-1-86016-492-7 eISBN 978-1-86016-493-4

7. 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) <http://www.salisburyfes.com/dec.htm>
8. Buyers Guide. Functional Electrical Stimulation for dropped foot of central neurological origin. CEP10010. Published by the NHS Purchasing and Supply Agency Feb 2010  
<http://www.cedar.wales.nhs.uk/sitesplus/documents/1091/CEP10010%20FES%20buyers%20guide.pdf>
9. Market Review. Functional Electrical Stimulation for dropped foot of central neurological origin. CEP10011. Published by the NHS Purchasing and Supply Agency Feb 2010  
<http://www.cedar.wales.nhs.uk/sitesplus/documents/1091/CEP10011%20FES%20market%20review.pdf>
10. Economic Report. Functional Electrical Stimulation for dropped foot of central neurological origin. CEP10012. Published by the NHS Purchasing and Supply Agency Feb 2010  
<http://www.cedar.wales.nhs.uk/sitesplus/documents/1091/CEP10012%20FES%20econ%20report.pdf>
11. Evidence Based Review of Stroke Rehabilitation (16th Edition) Teasell R, Foley N, Salter K, Richardson M, Allen L, Hussein N, Jutai J, Speechley M. Evidence Based Review of Stroke Rehabilitation (16th Edition) Teasell R, Foley N, Salter K, Richardson M, Allen L, Hussein N, Jutai J, Speechley M. Canada <http://www.ebrsr.com/>
12. Miller EL, Murray L, Richards L, et al. Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: a scientific statement from the American Heart Association. *Stroke*. 2010;41:2402-2448.
13. The Management of Stroke Rehabilitation Working Group. VA/DoD Clinical Practice Guideline for the Management of Stroke Rehabilitation. Version 2.0; 2010:150.4.
14. Multiple sclerosis: Management of multiple sclerosis in primary and secondary care. CG186 (2014) ISBN: 978 - 1 - 4731 - 0778 - 6  
<http://www.nice.org.uk/guidance/cg186/>
15. NICE guidelines 162 “Long term rehabilitation following stroke. June 2013. ISBN: 978-1-4731-0157-9 <https://www.nice.org.uk/guidance/cg162>
16. Cerebral palsy in adults NICE guideline [NG119] Published date: January 2019 <https://www.nice.org.uk/guidance/ng119/chapter/Recommendations>
17. Chuong Ho, Lorna Adcock. Foot drop stimulators for foot drop: A review of clinical-, cost-effectiveness and guidelines. Ottawa: CADTH; 2018 Jan. (CADTH rapid response report: summary with critical appraisal). ISSN: 1922-8147 (online) <https://www.ncbi.nlm.nih.gov/books/NBK537874/>

- 
18. 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%20up%20Paul/Paul/ref%20papers/A\\_Clinical\\_Practice\\_Guideline\\_for\\_the\\_Use\\_of.6.pdf](file:///E:/back%20up%20Paul/Paul/ref%20papers/A_Clinical_Practice_Guideline_for_the_Use_of.6.pdf)