

New evidence for the cost effectiveness of FES

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.

This paper reports the first randomised controlled study comparing FES (ODFS Pace) with AFOs (custom mouldered) for dropped foot correction with people with multiple sclerosis (pwMS). 85 pwMS who had not used either FES or an AFO for dropped foot correction were randomly allocated to each group and used the interventions for 12 months. The study showed that both groups achieved a significant improvement in walking, the FES group constantly walking faster than the AFO group. Closer examination of the data indicates that while the FES group achieved a minimum clinically important difference (MCID, Perera 2006) in mean walking speed when FES was used compared to walking without FES (an orthotic effect), this was not achieved by the AFO group when they wore the AFO. Figure 1 shows the difference in mean walking speed between walking with and without the allocated device for both groups, measured using the 5 minute endurance walk. Figure 2 shows the mean difference in walking speed between walking with and without the allocated device recorded using the 25 foot walk and shows that AFO group had inconsistent benefit from the device.

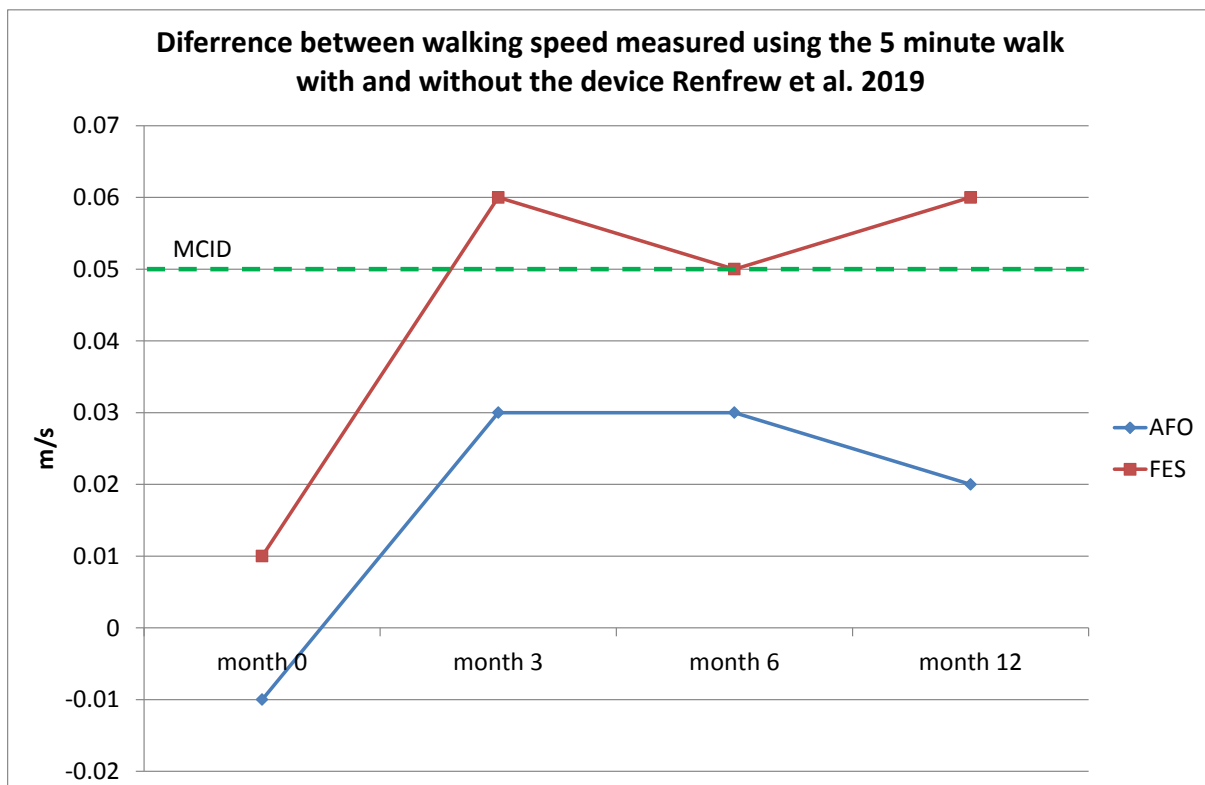


Figure 1

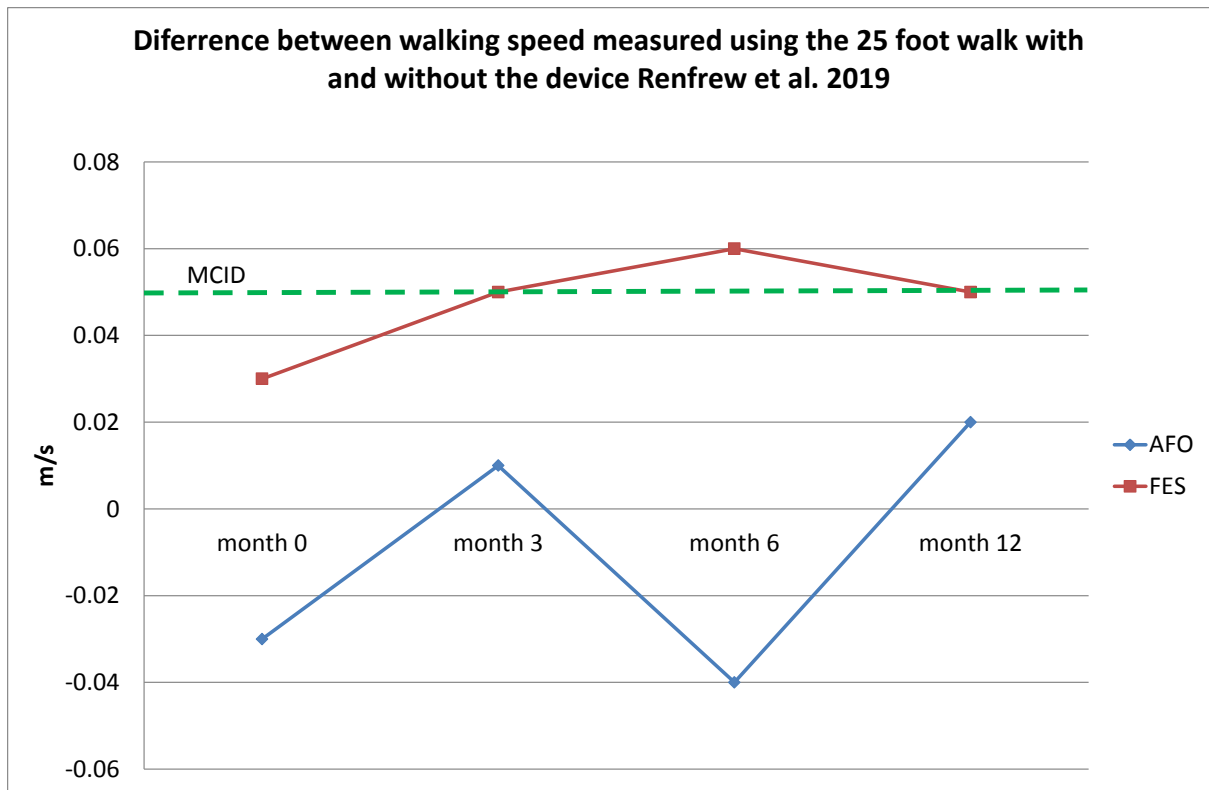


Figure 2

It is notable that the dropout rate was significantly greater amongst AFO users (49%) compared to FES (24%) over the course of a year. Further, when looking at the reasons for dropout listed in the consort diagram, in the AFO group 12 (28% of all those who started in the AFO group) dropped out due to issues related to the AFO while only 2 of the FES group (5%) dropped out because of FES related issues. Dropout due to none device related issues was also higher in the AFO group. The higher dropout rate in the AFO group is likely to have biased the results as it can be assumed that only participants who benefitted to use either device continued to use it. Figure 3 displays the attrition data for the two groups.

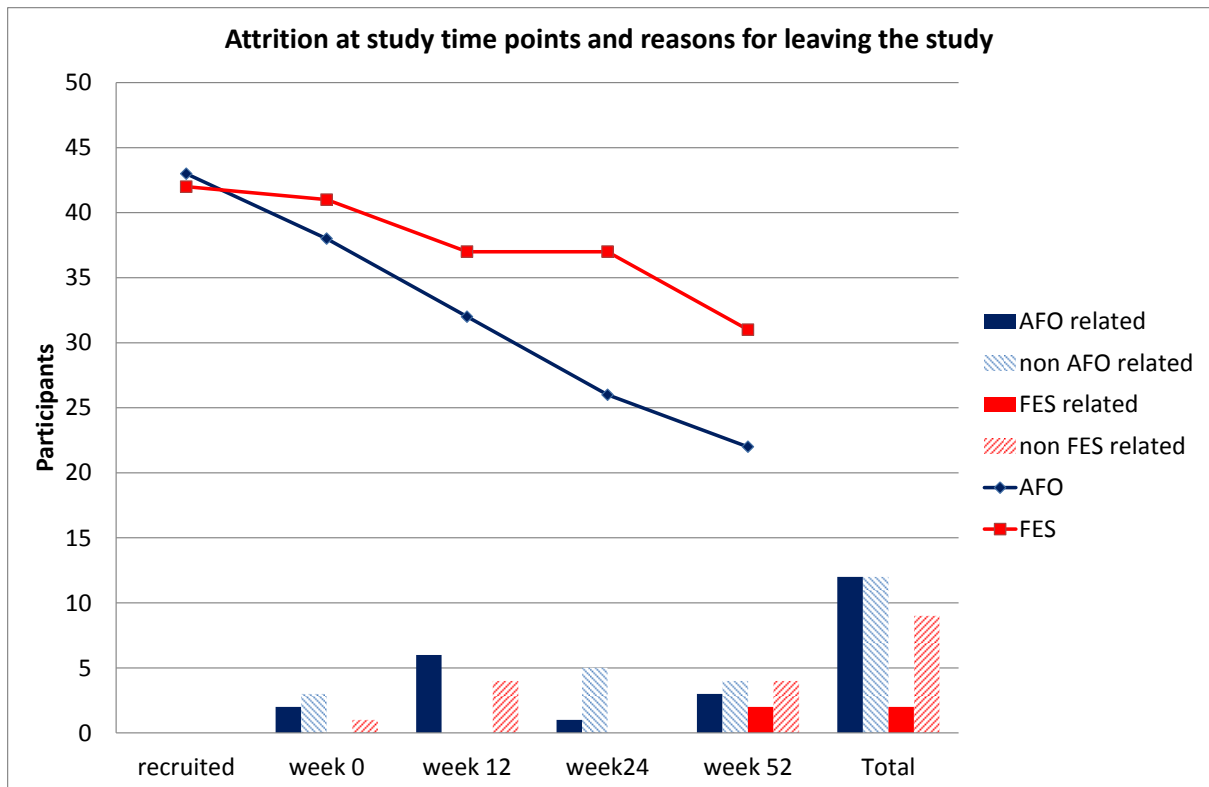


Figure 3

The study calculated the cost utility of each treatment and showed that FES gave better value for money than AFOs. This is because there was a greater quality of life gain with FES measured both with the EQ5D5L and the PIADS questionnaire and a lower abandonment rate. The incremental cost-effectiveness ratio (ICER) after 2 years of use was estimated to be £14,285.92 per QALY. For a treatment to be considered cost effective for the NHS, the ICER should be below £20,000 per QALY (Quality Adjusted Life Years). In another studies it shown that the average time FES is used by pwMS is 5 years so this would reduce the cost per QALY further because benefit is received for longer¹.

Reference

1. 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

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.

In a cohort study, Juckes et al. recorded the 10m walking speed, EQ-5D-5L and PIADS of 82 consecutive pwMS who received the ODFS Pace over 6 months. An increase in walking speed from 0.670m/s without FES at the start of treatment to 0.768m/s with FES at 6 months was found ($p<0.001$). The Utility index changed from 0.486 to 0.596 ($p<0.001$) over the same period giving a QALY gain of 0.110 and an estimated cost per QALY over 5 years of £6137. Statistically significant changes were also recorded in all 3 domains of the PIADS indicating improved device related quality of life.

For more information on the clinical and cost effectiveness of the ODFS Pace please visit:

<https://www.odstockmedical.com/knowledgebase/case-fes>

and

<https://www.odstockmedical.com/knowledgebase/introduction-fes-odfs-and-clinical-pathways-upper-and-lower-limb-fes>

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