

Stroke Conference 2019 – Radison Hotel Little Island on March 1st

Synopsis: Anthony Holten's presentation on his post stroke experiences, and using Electrical Stimulation to aid rehabilitation.

Introduction

My name is Tony Holten and I am aged 73 years. My background is in marine and oilfield engineering. These skills were practiced in Ireland and internationally, including Africa; Far-East; Japan and U.S.A. In later years I worked in the area of Hazard and Operability Studies (HAZOPS); specialising in troubleshooting and systems diagnostics/analysis.

My Stroke occurrence and hospital admission

Almost twenty years ago, on Dec. 7th 1999, I had a C.V.A. or stroke. The first symptoms were manifested just before lunchtime while I was working at Inch Gas Terminal in East Cork. These took the form of a sudden, severe headache, which lasted for about thirty seconds – the headache was followed by a dizzy spell. Later, during lunch break, I noted my right leg getting numb and stiff. That evening, while driving the twenty mile journey home to Glanmire, my right leg became completely dead; so I was obliged to finish the journey using one leg only – during this time I noted my right arm becoming stiff and dead.

I presented to my local G.P. next day, telling him that I suspected I'd had a stroke. Following his examination, he confirmed the stroke but sent me home again – explaining that, as no beds were available in any of the Cork hospitals, this measure might save me the extra 'trauma' of A. & E.

I presented at the hospital A. & E., about thirty-six hours after my initial symptoms. My stroke was confirmed following a further one and a half days spent warming the plastic chair and trolley. It was an ischemic stroke, centred in the left cerebellum and caused by reduction or blockage of blood supply. This resulted in paralysis of the right side and limbs.

Critical or acute Phase

The effects of my C.V.A. were slow acting over about four or five days. During this time I was fully conscious and had a ringside seat, observing my limbs 'wither on the vine.' When the damage bottomed out, both

limbs were flaccid and hanging uselessly, with my brain being almost unaware of their existence (which effect I refer to as **Sensory Disconnect**). As time passed, the flaccid muscles regressed towards atrophy... my once muscular and athletic limbs shrank quite literally before my eyes – an uncanny and most alarming situation, producing all sorts of weird sensations.

Rehabilitation

Little or no physiotherapy was provided during my time in hospital, just a couple of visits to the Occupational Therapist. That was the less than ideal situation prevailing then for stroke survivors... and heralded the beginning of my mystery tour through the labyrinthine health care system. I was discharged just before Christmas into the care of my sister, a retired SRN who lived in Tralee Co. Kerry.

Over the following two years or so I developed my own programme for rehabilitation. This was based mainly on private gyms and facilities, with an occasional visit to H.S.E departments – and several day trips to the N.R.H. in Dun Laoghaire. After this period, I phased out the gym work and concentrated mainly on physical work based upon more meaningful tasks, such as: restoration work on vintage cars; building a wall; climbing ladders and many more jobs around the house and garage. I also phased out and ceased using a **calliper or mechanical-type splint** on my affected right leg. I took up research and writing in an effort to improve damaged cognitive functions.

My most important discovery during this time was Electrical Stimulation or E.S. I first trialled this equipment at a private physiotherapy clinic in Cork, and purchased my own **Neurotech Electrical Stimulation** system through an outlet in Galway. It was a simple E.S. device, providing stimulation in the static mode only and not in the functional or F.E.S. zone.

I well remember the sensations felt when first using E.S. in Mary Byrne's Physio Clinic several months post stroke. It was like an awakening, my ailing brain cells making contact with and becoming aware of my defective upper limb – likewise with my affected lower limb. This '**sensory disconnect**' was present since the stroke damage bottomed out about five days post C.V.A. i.e. while my brain was aware of the

unaffected limbs and operated these in unison, it seemed to be unaware of the affected side and vice versa. With the advent of E.S. to my life, this situation changed considerably; although I still notice some disconnect symptoms from time to time.

N.B., I attribute both the extent and quality of my functional recovery to extensive and intensive use of E.S. during this post stroke period – in conjunction with a wide variety of meaningful physical tasks/exercises. I believe that this is a very effective methodology for ‘rewiring the brain,’ as it helps recover muscle memory resident within the stroke damaged brain cells.

My initial trial of Functional Electrical Stimulation

I participated in a community trialling of an Electrical Stimulation System, and attended at A.S.T. Clinic on Little Island, Cork for training and first fitting of the **Bioness L300** device on Dec. 7th 2012. A baseline was established as a datum point to measure progress... or not.

The trial period lasted for about sixty three days. During this time I revisited the clinic several times for evaluation and equipment recalibration. I followed the recommended exercise routine – and established additional techniques to more effectively use the equipment on varying terrain (in the real world outside the gym environment). This process included development of a daily log, which detailed all activity relevant to usage of the device, including: the time spent in functional or **F.E.S.** and **E.S.** or training mode.

Upon completion of the trial period (Feb. 8th 2013), a clinical test established that my walking had improved by up to 30%.

N.B., due to circumstances beyond my control I was unable to follow up on Electrical Stimulation until 2017. In mid-2017 I tested the device again under supervision of therapist Ronan Langan, who approved me as a suitable candidate for further trials.

Current trial from Jan. 23rd 2018 to present

I commenced this trial with a programme based upon the experience gained during the previous trials in 2012 – 2013, and made adjustments to same as I gained more knowledge of the device. I maintained a

detailed log of the equipment usage (in E.S. & F.E.S. modes) for the first 150 days of this period (Jan. 23rd to June 12th 2018).

N.B., prior to starting again on 23rd Jan. 2018, my physical condition had regressed considerably – perhaps because of the combined effects of ageing and trauma due to bereavement. I could walk only about one hundred metres before having to stop and take a breather – and my affected right leg had regressed to being a mere moveable prop. Foot-drop and angular foot-striking had become major problems, causing many trips and stumbles; together with the occasional fall... this situation was worsening progressively.

Now, twelve months later, this decline has been arrested and reversed. I can now walk at least a Kilometre without stopping; walk without using a stick and, best of all, negotiate my way through the human throng in Douglas shopping mall. In a recent test I ceased using any form of Electrical Stimulation for fourteen days, and noted that my walking did not deteriorate – an indicator that the carryover benefit of E.S. and F.E.S. has increased tenfold.

Opinions formed from experience of using E.S. and F.E.S.

- (A) I believe that E.S. has a huge potential in prevention of further damage to both the upper and lower limbs during the early post stroke phase. And opine that the treatment should be applied a.s.a.p. during the critical phase, after the patient is deemed fit for same, to help prevent further muscle degradation.
- (B) I believe that E.S. and F.E.S. should be made available to all suitable stroke survivors, as an **essential and integral element of rehabilitation**. And further believe that this measure would prove to be financially cost effective, in addition to its more obvious value to the stroke survivor's wellbeing.

