

Face to face: an interactive facial exercise system for stroke patients with facial weakness

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ABSTRACT

Each year 152,000 people in the UK have a stroke. Almost all have an initial facial weakness. Many resolve in the first few days but it is estimated that 26,000 people experience some kind of long-term paralysis in their face. This may impact on their eating, drinking, speaking, facial expression, saliva management, self-image and confidence. A survey of 107 UK based clinicians found that routine treatment of facial weakness was provision of exercises with a written instruction sheet. The UK National Stroke Clinical Guidelines recommend that patients undertake 45 minutes of therapy per day, but anecdotal evidence suggests that patients have poor adherence to the exercises because they find them boring and there is no feedback to help them see a difference. A multidisciplinary team, which includes patients, researchers and therapists have produced a working prototype system to improve facial weakness. It is called Face to Face and includes a Kinect sensor, a small form PC and a monitor. Patients follow exercises given by a therapist on the screen; the system records and simultaneously gives feedback, with a facial recognition algorithm providing tracking data for each captured frame of the user's face. Results from our small clinical trial indicate that the system is more successful at getting patients to complete their exercises than using a mirror, patients liked it, and they said it had helped improve their facial symmetry. Therapists said Face to Face encouraged patients to exercise daily, they liked the fact that it could be individually programmed and could record how much the patient had exercised. Based on the initial project work and positive outcomes Face to Face aims to help patients practice their facial muscle exercises to speed their recovery, providing direct benefits in terms of costs and time, and offering patients significant improvements.

Full papers will be published in the Conference Proceedings and will be freely available to delegates at the conference and online on September 20, 2016.