Progress Report

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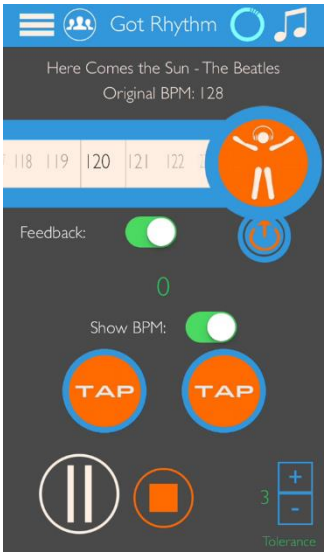
Date: 31 Jan 2018

Title of Project: GotRhythm: a mobile phone app to improve movement following stroke.

Summary

The use of music therapy to improve recovery of movement following neurological injury is gaining momentum. However, the field has been limited by the separation of music and feedback about movement in relation to the music. We have developed a novel Mobile Software Application (app)—GotRhythm—that uses mobile phones and wireless wearable sensors to deliver music therapy to patients *with real-time bio-feedback*.

Our app delivers a motor training protocol based on individualised choice of music, providing a simple, inexpensive, patient-driven rehabilitation intervention. The app collects data during training, providing a comprehensive motor performance dataset that can be correlated with clinical and physiological outcomes.



Hypothesis: We propose a project to test the efficacy of the GotRhythm app on motor performance and brain function in sub-acute stroke patients. We aim to use our GotRhythm app to entrain a motor response using music as a rhythmic cue, and test the efficacy of this app to (i) improve upper-limb motor function and (ii) increase motor cortical excitability in sub-acute stroke patients.

Progress so far: We have completed testing of GotRhythm to improve motor function and increase excitability of motor areas of the brain in healthy controls. We found that participants were able to use GotRhythm easily and enjoyed using the

app. After a single 20 minute session with the app, excitability of the motor areas of the brain had increase.

We have also completed pilot testing with stroke survivors to determine usability of the app in this population, a battery of movements that are functionally meaningful and suitable for training with GotRhythm, as well as task difficulty. Results from this pilot testing have shown that stroke survivors can effectively use GotRhythm, and we are now in the middle of our data collection to test whether use of GotRhythm in chronic stroke survivors leads to improved motor function and increases in excitability in motor areas of the brain.

We expect to have the results of our study by December 2018.