

Report to Participants: SCIPA Switch-On

Thank you for participating in the SCIPA Switch-On study. Herewith a summary of the results of this study.

Muscle wasting occurs very quickly after spinal cord injury as a result of paralysis and has significant consequences for functional recovery and long-term health. Functional electrical stimulation (FES)-assisted cycling has been shown to reverse muscle wasting, however this has not previously been used early after spinal cord injury. The purpose of this study was to determine how best to prevent muscle wasting in the legs early after spinal cord injury. In particular, we were interested to see whether using FES-assisted cycling or passive cycling (no stimulation) was safe to use in people with a recent spinal cord injury and whether it could prevent muscle wasting in the legs.

To answer this question, we conducted a study in which participants within 4 weeks of their spinal cord injury were allocated by chance to one of two groups. One group received FES-assisted cycling. This involved placing electrodes on the thigh and calf muscles on both legs. Stimulation of the muscles through the electrodes enabled participants to drive a specially designed cycle that could be operated with the person lying on their back. The other group used the same specially designed cycle that passively moved their legs in a cycling motion. They received no electrical stimulation to the leg muscles. The treatment was provided for 1 hour per day, 4 days per week for 12 weeks. All participants had an MRI scan of their legs to measure muscle cross-sectional area, as well as other tests, before and after the treatment period.

Twenty-four people within 4 weeks of their spinal cord injury participated in this study; they were from 4 spinal units in Australia and New Zealand. We carefully recorded adverse events that occurred during the study. One participant in the FES-cycling group grazed his leg on the cycle; two other participants in this group had adverse events that were probably related to the FES-cycling; these were a haematoma (localised collection of blood) in the thigh muscle, and an increase in blood pressure during one cycling session. On the whole, both treatments were safe and well-tolerated. We found that there was no difference in muscle cross-sectional area between the two groups at the end of the treatment period. However, the degree of muscle wasting in both groups was less than would have occurred without any intervention.

The number of participants in this study was too small to show whether functional electrical stimulation-assisted cycling was more effective than passive cycling in preventing muscle atrophy. Therefore more research is needed to answer this question. However this study has provided an important foundation for this future research.

Thank you again for agreeing to participate in this study and to contribute to research in spinal cord injury.