



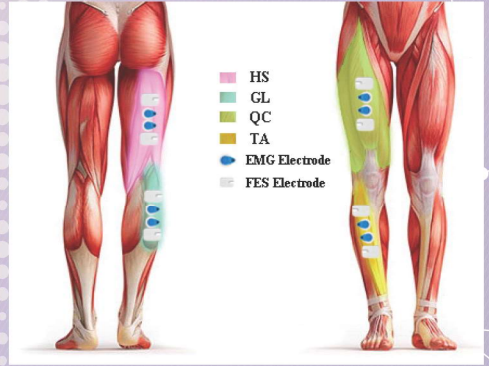
CUHK Jockey Club HOPE 4 Care Programme

Interactive Cycling System for Stroke Rehabilitation

Gait training is one kind of repetitive lower-limb stroke rehabilitation practice that is widely used and has been studied for its efficacy, but it requires residual balance and lower limb function which are often absent in the early rehabilitation stage of stroke survivors. Cycling provides another safe and effective option with less initial requirement.



Structure of the interactive cycling system



FES and EMG electrodes placement on target muscles

The Interactive Cycling System was designed for individuals with stroke or lower limb disability, it integrated both motor power and muscle power to facilitate the rehabilitation exercise. By using the intensity of electromyography (EMG) signals as the inputs for the voluntary intention (muscle activities from surface electrodes), the motor can be driven to rotate with different speeds to facilitate the cycling motion, and the electrical pulses from the FES device can stimulate the target muscles to generate muscle contraction to support the continuous cycling movement, which not only can help to strengthen their muscles but also train the brain to relearn the muscle coordination.

The Hong Kong Jockey Club Charities Trust has supported CUHK to launch a three-year project "CUHK Jockey Club HOPE 4 Care Programme" to implement four evidence-based advanced rehabilitation technologies in 40 local elderly day care centres and rehabilitation centres, to benefit the community.

