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Repetitive Paired Pulse Magnetic Stimulation Over Spinal Cord Modulates Corticospinal Pathway And Supports Balance Performance: A Randomised Placebo-Controlled Trial.

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Extended Abstract

Despite the growing interest on the application of repetitive magnetic stimulation in human research, the existing evidence shows only limited diversity regarding targeted regions and protocols [1]. This ongoing crossover study investigates an innovative approach in the modulation of corticospinal pathways and the balance ability in healthy young people. Repetitive paired pulse magnetic stimulation (paired pulses at 100Hz applied each 2 seconds, intensity of 70% of rMT, 800 pulses in total) [2] is applied over the spinal cord (L2 level) with a figure of eight coil. Three verum sessions, with coil handle oriented (i) superiorly, (ii) inferiorly and (iii) laterally, and (iv) one sham session (through sham coil) are applied to each proband in a randomized order. The balance ability (Y Balance Test [3]) and the corticospinal pathway functioning (motor evoked potentials, cortical silent period, ipsilateral silent period [4]) are tested for each leg and hemisphere immediately before and after each intervention. The interim analysis indicates that (a) the protocol is effective in the modulation of parameters assessed, and (b) the coil positioning impacts the effects on neural networks and behaviour. Our results support the continuation of the experiment on a larger cohort.

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