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Effect of transcranial direct current stimulation versus virtual reality on gait for children with bilateral spastic cerebral palsy: A randomized trial**Asmaa Radwan***Beni-Suef University, Egypt*

Impaired gait is a common sequela in bilateral spastic cerebral palsy. We compared the effects of two novel research interventions—transcranial direct current stimulation and virtual reality—on spatiotemporal and kinetic gait impairments in children with bilateral spastic CP. Forty participants were randomized to receive either transcranial direct current stimulation or virtual reality training. Both groups received standard-of-care gait therapy during the assigned intervention and for the subsequent 10 weeks afterward. Spatiotemporal and kinetic gait parameters were evaluated at three different times: (i) before starting the intervention, (ii) after two weeks of intervention, and (iii) 10 weeks after intervention completion. Both groups exhibited higher velocity and cadence, as well as longer stance time, step length, and stride length after intervention ($p < 0.001$). Only the transcranial direct current stimulation group exhibited increased maximum force and maximum peak pressure after intervention ($p's \leq 0.001$), with continued improvements in spatiotemporal parameters at follow-up. The transcranial direct current stimulation group had higher gait velocities, stride length, and step length at follow-up compared to the virtual reality group ($p \leq 0.02$). These findings suggest that transcranial direct current stimulation has a broader and longer-lasting effect on gait than virtual reality training for children with bilateral spastic cerebral palsy.

Biography

Asmaa Radwan works in the physical therapy department for child health, he is a professor in the physical therapy working as faculty in the beni-suef University at Egypt.