Improving postural control by innovative stimulation of the proprioceptive system (IMPULSES)

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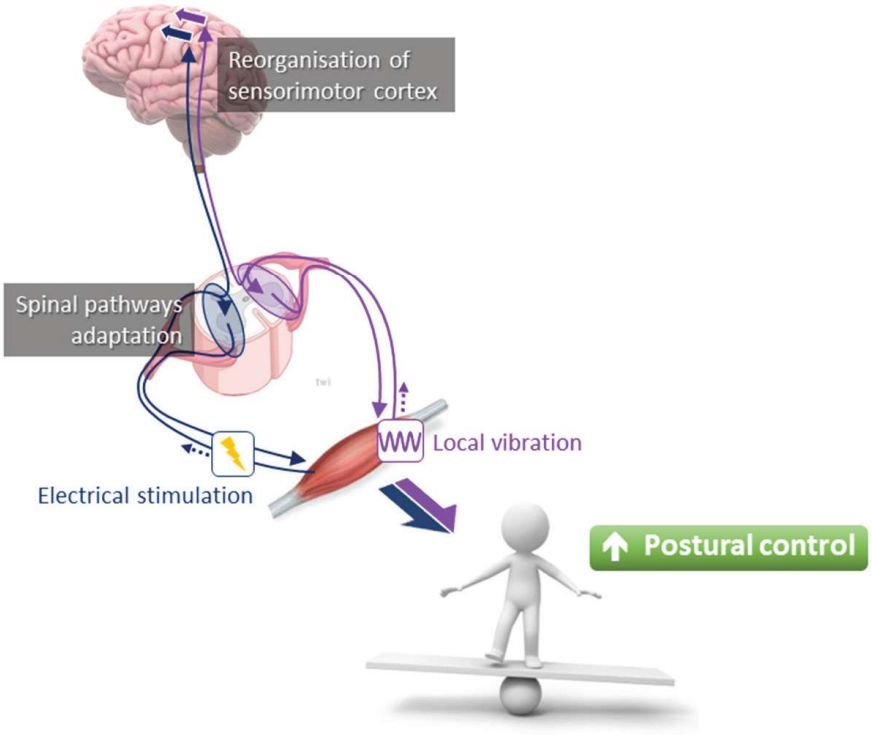
We all know our five senses: hearing, smell, touch, vision and taste. However, there is another one that we use constantly, even if we are not aware of its existence: the proprioception. It is the sense that informs our brain about the position of the different parts of our body, which allows us to know at any time its position and its interactions with the surrounding environment, and guides our movements without resorting to vision.

Proprioceptive sensors and other sensory organs (vision, inner ear) permanently send signals through our nerves to the spinal cord, then to the brain which analyses them, and depending on the situation sends commands to contract or relax certain muscles (sensorimotor integration).

Like all physiological systems, proprioception can dysfunction. When we consider the extent of its action, we realize that the symptoms of proprioceptive dysfunction can be very debilitating, notably by altering our balance and walking capacities; this is the case in children with cerebral palsy (CP) and older people. However, therapeutic interventions to improve or even retain proprioception remain unoptimized.

IMPULSES aims to provide a better understanding of how the alteration of proprioception interferes with balance and gait control, and to study whether the innovative combination of stimulating the proprioceptive system (by small electrical current or mechanical stimuli) while performing postural exercises can optimise the effects of postural exercises on posture and gait control thanks to improved proprioception, in children with CP and the elderly.

The scientific evidence from IMPULSES will open up new concrete perspectives and provide essential basic knowledge about proprioception, which could be extended to other clinical purposes.



IMPROVING POSTURAL CONTROL BY INNOVATIVE STIMULATION OF THE PROPRIOCEPTIVE SYSTEM

IMPULSES