

Developmental cognitive neuroscience perspective on motor rehabilitation: the case for virtual reality-augmented therapy

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ABSTRACT

Developmental disorders and disabilities affecting movement can have far reaching, longer-term consequences for the child and their family, and present a great challenge for intervention. In the case of upper-limb function, in particular, poor compliance and use of repetitive training routines can restrict progress. In this paper we consider how an understanding of the neurocognitive bases of disorders like cerebral palsy and Developmental Coordination Disorder (DCD) can inform the choice of therapeutic techniques. Using a cognitive neuroscience approach, I explore the hypothesis that *motor prediction* is a common, underlying issue in these disorders. I then discuss the role that feedback-based and predictive control plays during the course of normal development and highlight recent applications of *augmented feedback* (AF) in motor therapy. Critically, VR-based technologies afford many options for the provision of multisensory AF. I describe recent examples of this principled approach to treatment, and conclude by suggesting avenues for future development in VR-assisted therapy.

Full papers will be published in the Conference Proceedings and will be available to delegates at the conference on Sept. 10.

Full papers will be released on-line in the ICDVRAT archive on March 15.