

## The effect of video-guidance on passive movement in patients with cerebral palsy: fMRI study

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Mots-clés	Action-observation [7], Cerebral palsy [8], fMRI [9], Motor cortex [10], Passive movement [11], rehabilitation [12]
Résumé en anglais	<p>In patients with cerebral palsy (CP), neuroimaging studies have demonstrated that passive movement and action-observation tasks have in common to share neuronal activation in all or part of areas involved in motor system. Action observation with simultaneous congruent passive movements may have additional effects in the recruitment of brain motor areas. The aim of this functional magnetic resonance imaging (fMRI) study was to examine brain activation in patients with unilateral CP during passive movement with and without simultaneous observation of simple hand movement. Eighteen patients with unilateral CP (fourteen male, mean age 14 years and 2 months) participated in the study. Using fMRI block design, brain activation following passive simple opening-closing hand movement of either the paretic or nonparetic hand with and without simultaneous observation of a similar movement performed by either the left or right hand of an actor was compared. Passive movement of the paretic hand performed simultaneously to the observation of congruent movement activated more "higher motor areas" including contralesional pre-supplementary motor area, superior frontal gyrus (extending to premotor cortex), and superior and inferior parietal regions than nonvideo-guided passive movement of the paretic hand. Passive movement of the paretic hand recruited more ipsilesional sensorimotor areas compared to passive movement of the nonparetic hand. Our study showed that the combination of observation of congruent hand movement simultaneously to passive movement of the paretic hand recruits more motor areas, giving neuronal substrate to propose video-guided passive movement of paretic hand in CP rehabilitation.</p>
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### **Liens**

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