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Limb Apraxia

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ABSTRACT

Limb apraxia comprises a wide spectrum of higher-order motor disorders that result from acquired brain disease affecting the performance of skilled, learned movements. Limb apraxia is primarily classified according to the type of errors made by the patients, and the pathways through which these errors are elicited. The nature of many apraxic errors can now be objectively captured with three-dimensional motion analysis and novel views on brain organization derived from both experimental work and neuro-imaging have lead to the expansion of our knowledge on the neural representation of gestures, and so, to much better understand these complex cognitive-motor disorders. Whereas dysfunction of parieto-frontal circuits involved in sensorimotor integration may underlie limb-kinetic apraxia and certain types of ideomotor praxic deficit, disruption of action selection, motor attention and inability to store or access representational memories of gestures may be the mechanisms underlying some other limb apraxic disorders. Furthermore, ideational (or conceptual) types of disruption of normal or praxic deficits may reflect an inability to properly integrate systems subserving the functional knowledge of actions and those involved in object knowledge. Finally, recent functional neuroimaging findings together with sophisticated clinical studies have improved our knowledge on disorders of action imitation and action sequencing.