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A dynamic representation of the body in space

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ABSTRACT OF THE TALK

In order to interact with objects in the external world, the brain needs to process complex representations of the body and of the space immediately surrounding the body, termed peripersonal space (PPS). Body and PPS representations depend on the integration of different information from multiple sensory modalities, signaling the state and the position of body parts in space in relationship to external stimuli.

In a series of behavioral and TMS experiments, we studied the functional properties of PPS representations, their strong relationship with action and their possible neural correlates. One of the most intriguing properties of body and PPS representations is the possibility of being plastically modified through sensory-motor experience: for instance, using a tool to act upon portions of the far space, normally not reachable with a hand, induces a functional extension of body and PPS representations. We also proposed a neural network model reproducing neural, functional and dynamic properties of PPS representations.