

## Planning functional grasps of simple tools invokes the hand-independent praxis representation network: an fMRI study

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### Highlights:

- Planning functional grasps was assessed with fMRI in right-handers
- Grasp planning leads to left-lateralized activity in praxis representation network
- The network of areas is the same for both hands
- The results point to the importance of early affordance/function processing

**Supplementary Figure 1.** Planning control grasps of non-tools and hand effects for functional grasps. (A) Planning grasps of control objects vs. functional grasps of tools with the dominant right hand. No area from PRN was more engaged in the planning of control grasps. Interestingly, signal modulations in regions linked to the default mode network were revealed by this contrast. As none of these areas were activated for grasp planning versus the resting baseline, the obtained clusters reveal areas of weaker inhibition for the easier task. Notably, the angular gyrus (linked to functional grasping of tools by Randerath et al. 2010) was among the less inhibited areas for control grasps. Thus, its critical role for functional grasping of tools would depend on greater inhibition of activity in this region. (B) Direct contrasts of the right and left hand during planning of functional grasps. (Left panel) Right versus left hand. The only significant modulations were observed within the left sensorimotor cortices. (Right panel) Left versus right hand. The only significant modulations were observed again within the right sensorimotor cortices. These findings clearly indicate that the network of higher-order areas devoted for planning functional grasps of tools for the right and left hand were virtually indistinguishable. (C) Planning grasps of control objects vs. functional grasps of tools with the non-dominant left hand. As for the right hand, no area from PRN was engaged. Signal modulations in the right angular gyrus, linked to the default mode network, were revealed.

