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# The contribution of low-level action detection and high-order action recognition on the sensorimotor beta rhythm suppression

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## Abstract

A suppression of the cortical beta rhythm is a ubiquitous neural correlate of action observation. However, it remains unclear to which extent low-level action detection and higher-order recognition of actions' kinematics and goals contribute to beta suppression. Here, 24 participants, equipped with EEG, watched videos of kinematically natural goal-intact (Normal), kinematically unnatural goal-intact (How), and kinematically natural goal-violating (What) actions. We investigated the beta suppression at the time of action onset and at the time of action recognition. Across conditions, the beta rhythm was suppressed at action onset above both hemispheres, and no further change in the already suppressed beta rhythm was observed at the time of action recognition. Furthermore, beta suppression did not differ between Normal, How, and What videos. In conclusion, beta suppression is an ubiquitous characteristic of action observation but does not seem to be sensitive to the higher-order characteristics of observed action.