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Authors

Fujiwara, Masayuki

Shibata, Kosei

Hashimoto, Takashi

et al.

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Neural Activities in Intentional Motor Switching after Coordinating Bodily Motions in Pairs

Masayuki Fujiwara

Komatsu University, Komatsu, Ishikawa, Japan

Kosei Shibata

Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan

Takashi Hashimoto

Japan Advanced Institute of Science and Technology, Nomi City, Ishikawa Prefecture, Japan

Hiroaki Wagatsuma

Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan

Abstract

Human communication, known to occur between two individuals using various modalities, has attracted significant interest, particularly in the context of neural dynamics' studies. Embodied communication, especially in cooperative or competitive situations, has been a focal point of these studies. However, the neural activity during this process is not well understood from the viewpoint of motor intention in communication. It is crucial to note that intentional motor switching occurs following motor coordination within a pair. In this study, we conducted a simultaneous recording of EEG, motion, and gaze of two players engaged in our newly devised coordination game involving bodily motions. We observed significant differences in time-frequency power during cooperative and competitive situations in intentional motor switching. This finding suggests that the EEG power differences in local brain regions and in the alpha and high-frequency bands are effectively related to the process of intentional motor switching.