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Expertise differences in identifying the direction of an opposing footballer's moves: A behavioural and ERP study with point-light stimuli

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Expertise differences in identifying the direction of an opposing footballer's moves: a behavioural and ERP study with point-light stimuli

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Abstract

While their EEG was recorded, skilled and novice footballers viewed temporally-occluded point-light video clips of opponents dribbling the ball towards the viewer then turning to the left or right, either without deception (50% of trials) or with a stepover action to feign moving in one direction before going in the other (50% of trials). Skilled footballers showed overall superior judgement of final direction (d') based on early body kinematics. Event-related EEG alpha band-power (9-11 Hz) was greater in experts than novices both before and during the video. However, relative to the pre-stimulus peak there was greater alpha desynchronization during action observation in experts, and for deceptive than for non-deceptive actions. ERP data also showed greater amplitude of a CNV-like frontal negativity in skilled players than novices. Expertise in perceiving deceptive intent thus affected EEG measures both during action observation and at the response preparation or expectancy stage.

Research Area

Perception and Sport