

Quick decisions in soccer enhanced by brain's ability to suppress actions, researchers find

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The neural process to suppress actions also plays an important role in a soccer player's decision-making. Credit: Osaka Metropolitan University

To pass or not to pass, that is the question faced by soccer players the world over in every match. It might be unsurprising that higher skilled players exhibit better execution of actions than lower skilled ones, but now an Osaka Metropolitan University-led research team has evidence that the neural process to suppress actions also plays an important role. The findings were published in [Brain Sciences](#).

Research Center for Urban Health and Sports Assistant Professor Takahiro Matsutake and colleagues conducted an experiment to see how three levels of soccer players perform when faced with the same tasks.

The researchers recruited 14 collegiate soccer players, with half of them highly skilled, and seven graduate students who did not have formal soccer training. All 21 subjects were men. As one part of the experiment, a series of photographs showing different arrangements of two defenders and three offensive teammates from a [first-person perspective](#) was displayed. The participants had to push a foot switch button if a pass downfield between two defenders was possible.

The [reaction time](#) was significantly shorter in the higher skilled group than in the novice group, and variability was small in the higher skilled group. Furthermore, electroencephalographs revealed the neural waveforms that showed stronger processing of inhibition, which restrains a motor response, in higher skilled players.

"The results of this research will help advance our understanding of the perception, cognition, and behavior of [soccer players](#)," Professor Matsutake said. "In the future, we will examine whether training concerned with response inhibition improves player performance and

aim to establish effective training methods."

More information: Takahiro Matsutake et al, Fast and Stable Responses during Decision Making Require Strong Inhibitory Processes in Soccer Players, *Brain Sciences* (2024). [DOI: 10.3390/brainsci14030199](https://doi.org/10.3390/brainsci14030199)

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