Caffeine can have a negative impact on soccer players' decision-making skills, new research shows

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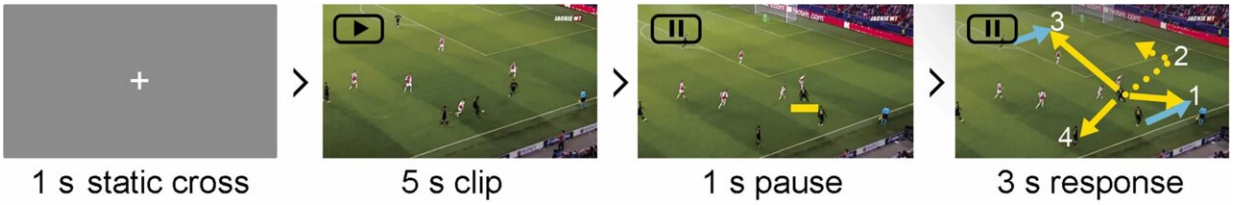

The order and duration of stimuli for the decision-making task. For measuring pass accuracy, participants dribbled for 5 m and passed the ball towards cones at 10 m (short pass) or at 30 m (long pass). The distance from the cone determined the point for the players; hitting the cone would be 4 points, missing within 1 m would be 2 points, and more than 1 m would be without any points. Each participant repeated each pass five times, and the average of the five shots determined their score for short and long passes. The intraclass correlation coefficient for a short pass was 0.54 (95 % CI = 0.11–0.83), and for the long pass was 0.60 (95 % CI = 0.14–0.86). These coefficients indicate reasonable reliability. Credit: *Behavioural Brain Research* (2023). DOI: 10.1016/j.bbr.2023.114732

A study published in the *Behavioural Brain Research* by Staffordshire University and Shiraz University in Iran has found that while consuming caffeine before a game can improve the accuracy of soccer passes, it can have an adverse effect on more tactical play involving a higher number

of passes.

Dr. Pooya Soltani, Senior Lecturer in Games Technology at Staffordshire University, explained, "Caffeine is one of the most popular dietary supplements which has been shown to provide benefits during exercise, including soccer. Studies have shown that caffeine can enhance attention, accuracy, and speed, as well as self-reported measures of energy and mood.

"However, the effects of caffeine on 'higher' cognitive functions such as problem-solving and decision-making are often debated, so we decided to investigate this."

Twelve young soccer players, aged between 16–17 years old, took part in a series of tasks to explore the impact of caffeine on decision-making and passing accuracy.

Participants performed five short (10m) and five long (30m) passes, as well as the Loughborough Soccer Passing Test, which assesses skills including passing, dribbling, control, and decision-making. The researchers then used a computer task to measure decision-making in different gameplay scenarios, with participants asked to determine the best outcome of ten simulated pre-recorded events.

The participants completed the tasks once after taking 3 mg/kg body mass of caffeine and once after consuming similar amounts of placebo.

The soccer players were 1.67% more accurate in short passes and 13.48% more accurate in long passes when they consumed caffeine compared to the placebo. However, participants' decision-making was 7.14% lower and the Loughborough Soccer Passing Test scores were 3.49% lower when they consumed caffeine compared to the placebo.

Negar Jafari, from Shiraz University, said, "While the short pass accuracy remained consistent among almost all participants before and after caffeine consumption, the performance varied in the case of long passes. Moreover, most of the participants scored lower on decision-making and the Loughborough Soccer Passing Test after consuming caffeine. This may suggest that more complex tasks with a higher number of passes might negatively be affected by low doses of caffeine ingested one hour before playing."

The researchers, however, are not suggesting that soccer players should avoid caffeine completely and recommend further research into its effects on decision-making in the game.

"During a soccer match, players must process various cues such as opponents' positions, team organization, and time pressure. Decision-making in passing is particularly important, where a well-executed pass can create scoring opportunities," Dr. Soltani commented.

"Our findings show that this can be affected by caffeine intake, and coaches may find these performance metrics useful to explore in training. A number of parameters can be involved—the dosage of caffeine relative to body weight, the frequency of caffeine intake, and certain positions of the players or their playing styles. For example, a slight decrease in pass accuracy might be crucial for a midfielder but less impactful for a goalkeeper."

More information: Negar Jafari et al, The effects of acute caffeine ingestion on decision-making and pass accuracy in young soccer players: A preliminary randomized controlled trial, *Behavioural Brain Research* (2023). DOI: 10.1016/j.bbr.2023.114732

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