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LETTER

Commentary on: The Effect of Task Cognitive Difficulty on Perceptual-Cognitive Indicators: Evidence on the Relationship Between Challenge Point Framework (CPF) and Cognitive Development in Table Tennis Beginners [Letter]

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Dear editor

We read with great interest the study by Taghi et al[1] on the effects of cognitive task difficulty on perceptual-cognitive indicators in table tennis beginners. While the study provides valuable insights into the application of the Challenge Point Framework (CPF) in cognitive-motor learning, there are several methodological and interpretational aspects that warrant further discussion.

Firstly, the study claims to investigate the role of different levels of cognitive difficulty in motor learning. However, the results indicate no significant differences between difficulty groups, suggesting that either the intervention period (eight sessions of 30 minutes) was insufficient to induce measurable differences or that the manipulation of task difficulty was not substantial enough. The authors acknowledge this as a limitation but do not discuss whether alternative training durations or cognitive training paradigms could yield different outcomes.

Secondly, while the study attempts to align with the CPF, it does not clearly define how cognitive difficulty interacts with nominal and functional task difficulty within this framework. The CPF is primarily designed to explain motor learning processes, and its extension to cognitive difficulty needs stronger theoretical justification. Additionally, the lack of significant differences between groups questions whether the CPF is a suitable model for cognitive-perceptual learning.

Another methodological concern is the use of the Attention Network Test (ANT) and cognitive effort measures. While the ANT is a valid tool for assessing attentional components, the authors report no significant improvement in the alerting and orienting networks, only in executive control. This suggests that the training may have primarily targeted executive functions rather than perceptual-cognitive integration in motor learning. Furthermore, the cognitive effort test results were inconclusive, raising concerns about whether the selected assessment tools were appropriate for capturing the intended constructs.

Additionally, the authors claim that cognitive training improved working memory performance, but since there were no significant differences between task difficulty groups, it remains unclear whether these improvements were due to training or general practice effects. The study could have benefited from a more rigorous control condition, such as an alternative cognitive training intervention, to isolate the effects of task difficulty.

We think that answering the questions posed in this letter will improve comprehension of the study's conclusions. We appreciate the authors' thoughtful work and acknowledge the difficulties associated with experimental research.

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Reference

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