University of São Paulo
School of Physical Education and Sport of Ribeirão Preto
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Dear Editor,

Ribeirão Preto, Brazill
February 2nd, 2026

We are excited to re-submit our original article, "*The role of general cognitive functions in youth soccer players' performance in small-sided games using a machine learning approach*" for your consideration at the **Perceptual and Motor Skills** journal. We believe the content of our work fits well with the Journal Scope with a special focus on performance of perceptual and motor skills. Our research unites three main areas, including Sport Science (performance analysis), Machine Learning and Cognitive Science. We present innovative findings that contribute to understanding how general cognitive functions are related to athletes' performance in soccer. We believe that our paper has potential to make a significant impact within the field with innovative data analysis approach and a critical review of the present literature about general cognitive functions and soccer performance.

Our study aimed to analyze how general cognitive functions are related to different demands of soccer small-sided games, including scoring goals, conceding goals, assisting teammates in scoring goals, and overall effectiveness. We investigated the differences in the cognitive functions between athletes from the same competitive level (under 17 elite soccer athletes). For initial analysis we used traditional statistics for correlations and group comparison (superior and inferior performance). We felt it was important to include this "more traditional" statistical analysis to describe the effect size of our findings and offer more comparable results for discussion with the current literature. We believe that our findings can show new paths for the study line by comparing the predictive power of the variables and highlighting the best performing data modeling techniques.

For a deeper analysis and to test the predictive power of cognitive functions, we used machine learning to classify players as having superior or inferior performance in a multiple 3x3 small-sided games protocol. We believe that the machine learning techniques we employ are innovative and provide new insights into the field of cognitive functions and sports performance. Our study is also the first to demonstrate that cognitive functions have potential to predict performance differences among athletes of the same competitive level. We were very careful with the data management for Machine Learning application in small datasets. We followed other authors' instructions for interpreting the prediction power of our analysis and how that can help on theory building and new hypotheses generation that can be further investigated in terms of causality. (See Shmueli G. 2010. To explain or to predict? for details).

All authors were fully involved in the study and preparation of the manuscript, they agree with the content of the re-submitted version, and ensure that ethical guidelines were approved and followed during the research development. I assume responsibility for keeping my co-authors informed about the editorial review process, the content of reviews, and any revisions made.

Thank you for considering our submission. We look forward to your feedback and the opportunity to contribute to the Perceptual and Motor Skills journal.

Sincerely,

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