COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK
DEPARTMENT OF BIOMEDICAL ENGINEERING

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Dear Editors,

We are pleased to submit our manuscript, "Physiologically-Informed Predictability of a Teammate's Future Actions Forecasts Team Performance," for consideration in *iScience*. This research utilizes a novel virtual reality (VR) environment and multi-modal deep learning based physiological signal analysis to investigate biomarkers of superior team performance. Contrary to the prevailing belief that high-performing teams exhibit synchronization of physiology and behavior across team members, our findings illuminate a more nuanced reality: the essence of high-performing teams lies in the predictability of a teammate's behavior, given other teammates' physiology and behavior.

Our study introduces a triad human collaborative sensorimotor task in VR and a novel transformer-based predictability metric to explore the intricate dynamics governing team performance. Through meticulous analysis, we demonstrate that predictability is a key physiological marker of high-performing teams. Our findings challenge and extend current understandings of team dynamics, showcasing the potential of VR technology, multi-modal data analysis, and deep learning in studying muti-human collaboration in complex tasks.

We submitted our paper to *Current Biology* since some metrics we used for the synchrony analysis were inspired by a previous paper published there, namely by Dikker S, Wan L, Davidesco I, et al. (2017). "Brain-to-brain synchrony tracks real-world dynamic group interactions in the classroom". *Current Biology* 27(9):1375–1380. However, the Senior Scientific Editor, Cyrus Martin said, "Although we cannot consider your paper at Current Biology, I wanted to let you know about iScience, a new multidisciplinary open access journal at Cell Press covering life and physical sciences. We feel that **your manuscript might be a good fit for this journal, and I can confirm that iScience would be willing to send your paper out for peer review."** We look forward to receiving reviews.

Sincerely,

Paul Sajda

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