May 19, 2021

Dr. Brad Postle

Reviewing Editor

*eNeuro*

Dear Dr. Postle,

We are submitting Stage 2 of our Registered Report manuscript **eN-RGR-0265-20 (“Movement variability constrains locomotor use-dependent learning”)**.

Our Stage 2 manuscript includes only a minor stylistic change in the Introduction which is marked in tracked changes. In the methods we did not track changes when changing from future to past tense but we did mark other changes. Specifically, we added verbiage regarding the registered report process in the beginning of the methods. We also would like to note some logical flaws in our original submission which we have adjusted:

1. We changed the amount of time allotted between conditions, allowing for conditions to take place greater than 5 days instead of 5-10 days. This allowed for more flexible data collections and we do not believe it confounded our experiment.
2. We performed all analysis in MATLAB for convenience and for accurate integration with our live feedback analysis. This resulted in a change to the type of filter we used to accommodate for all analysis being performed in MATLAB.
3. We added each component of the S+U model into the simulations plot and changed it to make it more consistent with the behavioral plots

The manuscript includes a link to the public archive containing anonymized study data, digital materials/code and the laboratory log on page xx of the manuscript. The manuscript also contains a link to the approved Stage 1 protocol on the Open Science Framework on page xx. No data in this Stage 2 Registered Report were collected prior to Stage 1 approval. Furthermore, we do not include any of the Pilot data we collected for our Stage 1 submission.

We look forward to hearing from you.

Sincerely,

Jonathan Wood, Susanne Morton, and Hyosub Kim