Review of: "Throwing is affected by self-movement"

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Potential competing interests: No potential competing interests to declare.

This is an interesting study showing novel results on distance perception during body motion. Namely, the effect of distance overestimation while running is studied within a shorter range of distances than those previously studied.

I will now provide comments on each section of the manuscript, in their order of appearance during the reading process.

Introduction section:

“This model derives from the idea that mutually inhibitory interactions between simultaneously activated units may promote more efficient coding (Barlow & Földiák, 1989). This could explain the improvements in perceptual discrimination observed when two different sources of visual information are correlated”.

I would suggest the authors to expand on this idea, as it may be difficult for readers to understand why “mutually inhibitory interactions between simultaneously activated units may promote more efficient coding”, and why that “could explain the improvements in perceptual discrimination observed when two different sources of visual information are correlated”.

Procedure section:

General comment in the procedure section: It would be helpful to add a figure indicating the location of the participant, as well as the target and indicator during the experiment.

“The order in which participant performed conditions”. I would suggest changing “participant” to “participants”.

“In the case of motor stimulation, he was adapted”. I would suggest changing “he was” to “participants were”. “Otherwise, he just stood still”. I would also change it accordingly.

“As it is known from previous studies, running for one minute is enough to produce adaptation (Durgin et al., 2005), which we could verify in the pilot experiments”.

It would be helpful to mention which pilot experiments are the ones being referred. Did the authors conduct a pilot study previous to the experiments reported in the manuscript?

“They were asked to close their eyes”. I would suggest changing to “Participants were asked to close their eyes”.

Results from experiment 1:

“A paired-sample t-test indicates that matching distances obtained in both conditions are statistically different ($p<0.001$)”

I would suggest adding other relevant information apart from the p-value. It would be interesting to report: statistic used, degrees of freedom, p-value, whether one-tailed or two-tailed, the value of d, and 95% CI.

Experiment 2, participants:

It would be helpful to explicitly specify whether the participants taking part in experiment 2 did so after experiment 1, or not.

Figure 1: This figure is very helpful to understand experiment 2. However, most of the information it displays is not explained in the caption. In this regard, some of the elements in the figure are identified with letters which readers may not understand.

Results:

“regardless of the target height (HR vs HS and LR vs LS)”: The abbreviations “HR vs HS and LR vs LS” are introduced here without any other previous explanation other than the one given in Figure 3. I would suggest introducing these abbreviations even earlier than Figure 3.

“These findings align with the predictions of our model”. I would suggest the authors to explicitly specify how the results relate to the reported model. Also, is this model the one referred in the sentence “we employed a model of perceptually directed action based on a representation of space in memory”?

Discussion:

“Finally, as depicted in Figure 4, it is evident that the effect of running on the treadmill persists in the throwing distance at the ground height, exhibiting even more substantial differences compared to those obtained at the target height.”

I would suggest the authors to very carefully explain how the results and what is being analysed in Figure 4 differ from Figure 3. Otherwise, this may be confusing. Have any statistical analyses been performed on the results from Figure 4?