



# Response to: Role of Virtual Reality in Balance Training in Patients with Spinal Cord Injury: A Prospective Comparative Pre–Post Study

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Dear Sir,

We appreciate the letter regarding our manuscript titled “Role of virtual reality in balance training in patients with spinal cord injury: a prospective comparative pre–post study [1].” We thank the reader/s for reading our article. Our reply to their comments is as follows:

Comment 1: The sample size for this study was calculated based on a pilot study. The effect sizes for pre–post differences in the outcome measures from the Berg Balance Scale (BBS), Functional Reach Score (FRS), and balance section of the Tinetti Performance-Oriented Mobility Assessment (POMA-B) were found to be 0.81, 1.25, and 1.22, respectively. Assuming an acceptable alpha error of 0.5 and aiming for the 95% power of the study, the sample size for a two-tailed hypothesis was found to be 22, 11, and 11, respectively, for the three outcomes. But I found the sample size 34, 14, and 16, respectively for BBS, FRS, and POMA-B when it is calculated using the G\*Power software (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany; <http://www.gpower.hhu.de/>) based on the above criteria [2].

Our reply: We were surprised about the “concerns” pointed out by the author of the letter. The reader seems to be mistaken in their calculations of the sample size based on the provided effect sizes. We performed the

calculations again, and the results were the same as those published in the paper. The same may be found in the screenshots attached as a Supplementary Fig. 1 to this reply.

Comment 2: Next, on page 54, Fig. 1 of Sengupta et al. [1], the authors had mentioned follow-up in all parts of allocation, follow-up, and analysis, which are not appropriate [3].

Our reply: The diagrammatic inaccuracy in Fig. 1 of Sengupta et al. [1] has been addressed. There seemed to be an error in the publishing process, and the authors would like to acknowledge the careful corrections. The headings of Fig. 1 have been revised to more appropriate terms, such as “allocation,” “follow-up,” and “analysis”.

Comment 3: Authors did not analyse the normality test due to small sample size. According to central limit theorem, violation of the normality is not a major issue when the sample size  $\geq 100$ . Although for meaningful conclusions, assumption of the normality should be followed regardless of the sample size. Normal distribution of continuous data is represented as mean value. Further, significant level ( $p$ -value) of between and among groups are calculated by using the mean value. Data those are not normally distributed, resultant mean is not a representative value of our data. Selecting the wrong representative data and calculating significance level using the value of

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data set might give wrong interpretation. That is why, first the testing of normality of data is important. Then the decision is taken whether mean is applicable as representative value of the data or not. If applicable, then parametric test is used to compare means, otherwise medians are used to compare the groups, using nonparametric methods [4].

Our reply: We believe that this concern is invalid. We request the reader to kindly go through the documentation of the package “nparLD” used for the analysis [5]. The analysis used was nonparametric in nature, and the “normality” of the data does not apply to the context of this type of analysis. To the best of our knowledge, this is the most commonly used method for conducting nonparametric hypothesis testing for mixed-design models. Generalized linear models may also be tried; however, given our small sample size, the nonparametric longitudinal design model was chosen as appropriate method for analysis.

### Conflict of Interest

No potential conflict of interest relevant to this article was reported.

### Supplementary Materials

Supplementary materials can be available from <https://doi.org/10.31616/asj.2020.0051.r2>. Supplemental Fig. 1. G\*Power printscreens of sample size calculations.

### References

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