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

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To the Editor,

I have read the article titled "Role of virtual reality in balance training in patients with spinal cord injury: a prospective comparative pre–post study," by Sengupta et al. [1]. The study discusses the use of virtual reality in balance training. However, I would like some of my concerns and queries to be addressed in this issue.

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 95% power of the study, the authors found the sample sizes for a two-tailed hypothesis was 22, 11, and 11 for the three outcomes, respectively. However, when the sample sizes for BBS, FRS, and POMA-B were 34, 14, and 16, respectively, when calculated using the G\*Power software (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany; http://www.gpower.hhu.de/) based on the above criteria [2].

In addition, on page 54, Fig. 1 of Sengupta et al. [1], the authors mentioned follow-up in all areas of allocation, follow-up, and analysis, which are not appropriate [3].

The authors did not test for normality because of small sample size. According to central limit theorem, violation of normality is not a major issue with sample size ≥100, but to draw meaningful conclusions, assumption of normality should be followed regardless of the sample size. Continuous data with a normal distribution should be presented as mean values, and significance levels ($p$-values) between and among the groups should be calculated using the mean value. However, for data with non-normal distribution, the resultant mean is not a representative of the data. Selecting the wrong representative data and calculating the significance level using this value might lead to a wrong interpretation. Therefore, testing for normality of data is important. The decision can be taken as to whether the mean is applicable as a representative value of the data. If applicable, a parametric test is used to compare means, otherwise medians are used to compare the groups using nonparametric methods [4].

## Conflict of Interest

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

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## References

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