OPEN PEER REVIEW REPORT 2

Name of journal: Neural Regeneration Research
Manuscript NO: NRR-D-21-00027
Title: The Effects of Electroacupuncture on Pain Sensation in a Rat Model of Hyperalgesia with Nicotine Dependence
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COMMENTS TO AUTHORS

The analysis and display of the data could be greatly enhanced. The use of analysis of variance (whether two or one tailed) and p-values as a standard for statistical analysis is NOT the most appropriate and the hypotheses are seldom justifiable for this kind of data. I recommend that the authors review basic concepts about quantification of random variables and specifically, on the central limit theorem and the use of probability generating functions. Of note, the pain threshold data is positive definite, and it is not a very large sample. However, the analysis regards a translation and re-scaled version of the sample as normally distributed (ranging between minus and plus infinity), but this kind of data will never have long negative tails. There are no comparisons of the error of this approximation, as usual when performing these tests. It was not necessary to change the data for a statistic or for display. Also, the flaws of addressing significance comparing p-values to threshold of 0.05 have been thoroughly documented.

It is crucial to better understand the importance of knowing the range of a random variable and the impact of the sample size on that range to decide on a statistical test, and how to display the data. Of note, I recommend reviewing the use of probability generating functions, and in parallel, literature exposing problems with using p-values. If you do so, please pay attention to the reasons why it is misleading and potentially incorrect to use "kitchen-recipe", pre-defined by "consensus", significance thresholds of 5/100. In the annotated pdf I make specific suggestions to review literature, and also, to improve the analysis to drop the p-values and use a sensitivity description instead. Explicitly, instead of using a significance threshold, the authors could have used a interval to describe the p-values for which their conclusions are in line with the data. If followed, the suggestions made in the previous paragraph may serve the authors well, and possibly other scientists that by extension have interactions and discussions with them on the subject.