

# Mobile Based EEG Assessment of Fatigue in Clinical Practitioners

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## INTRODUCTION

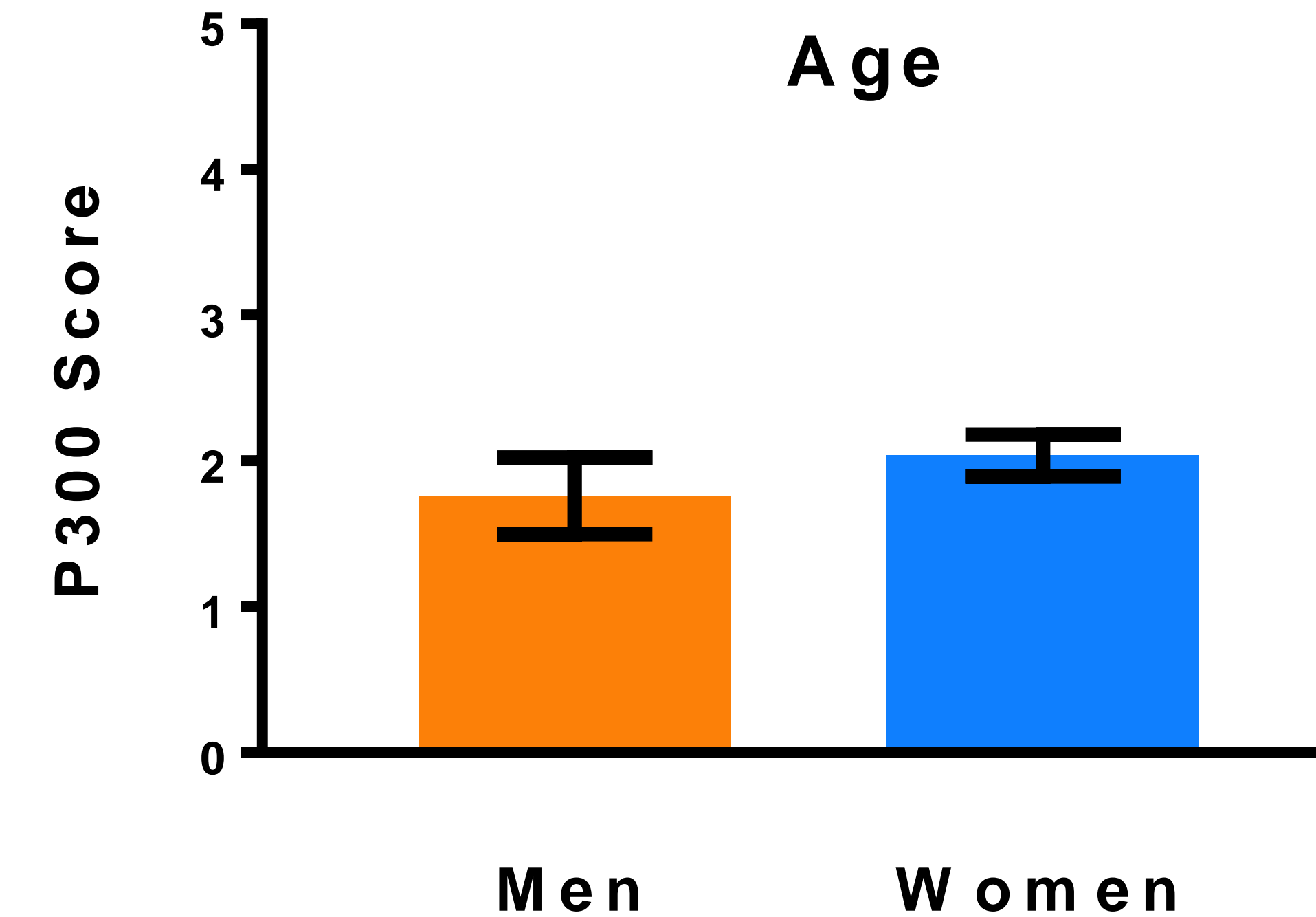
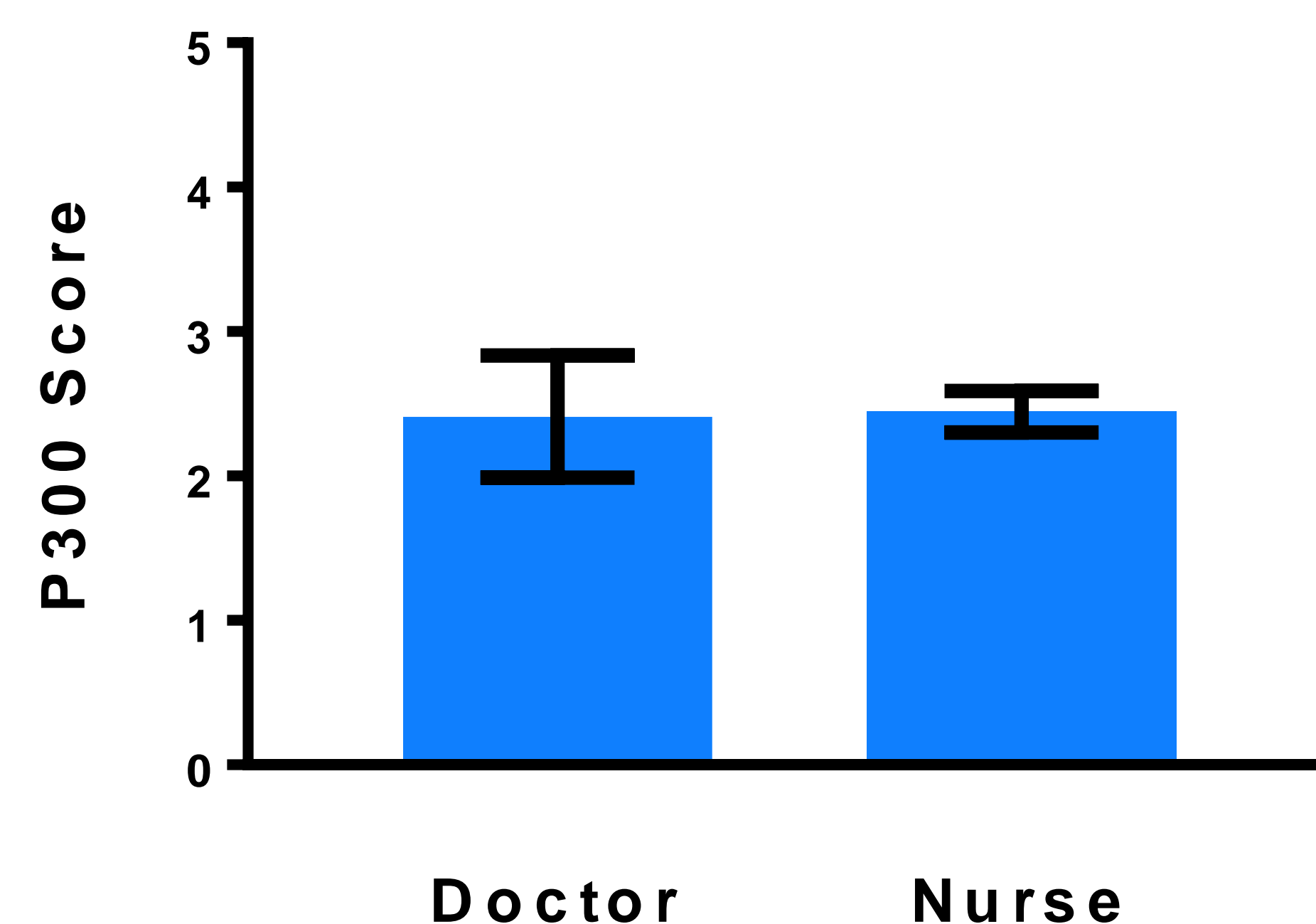
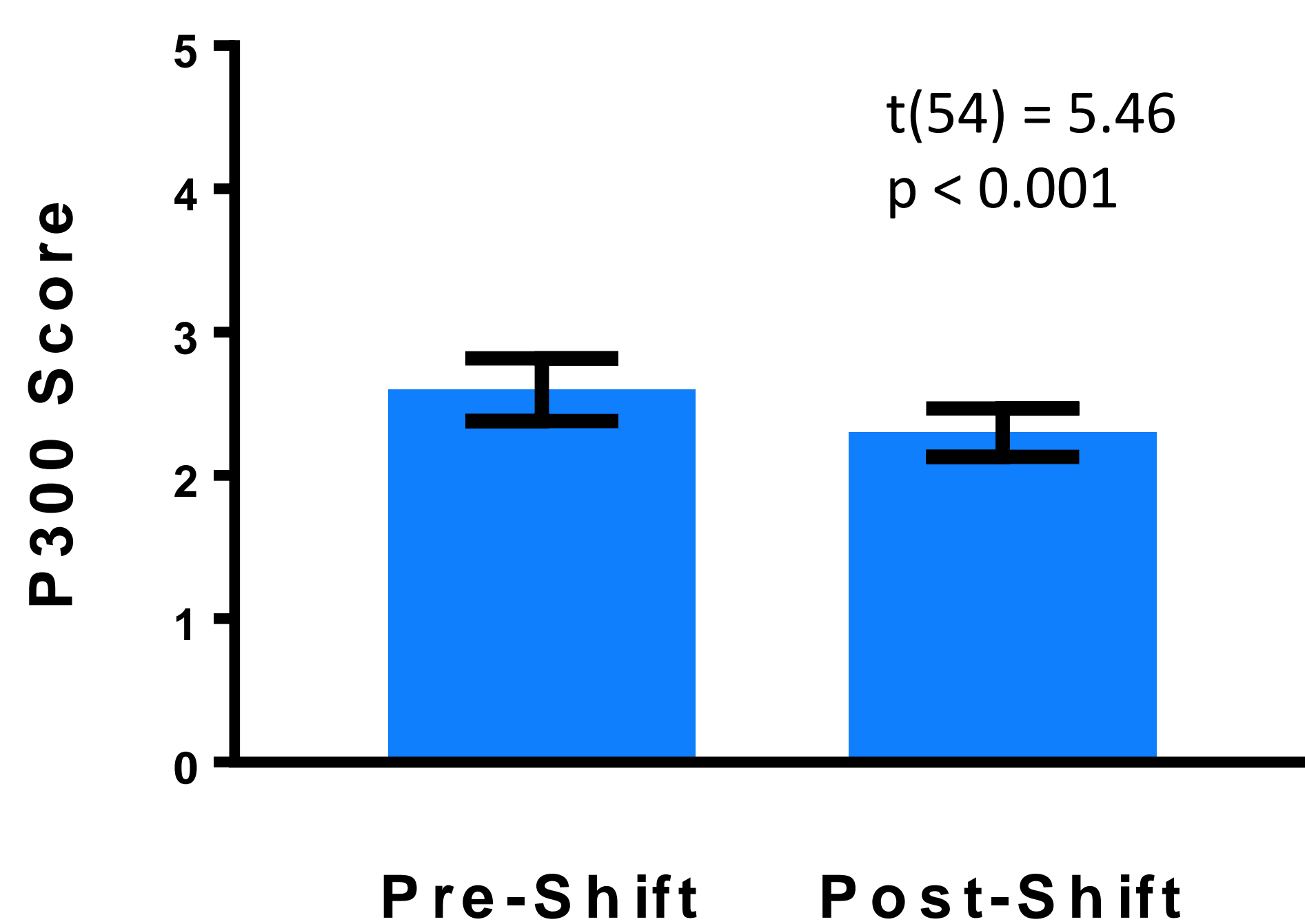
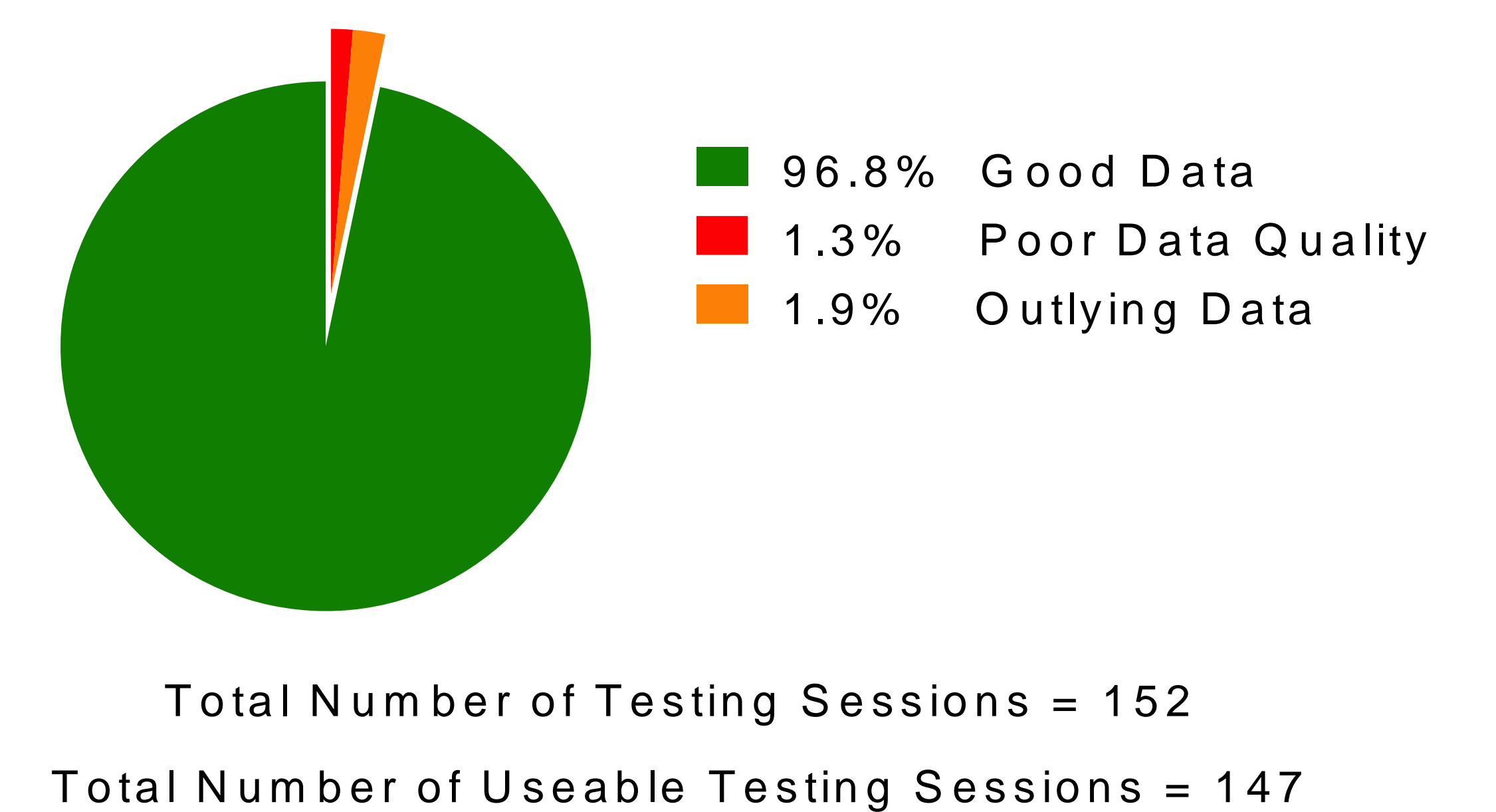
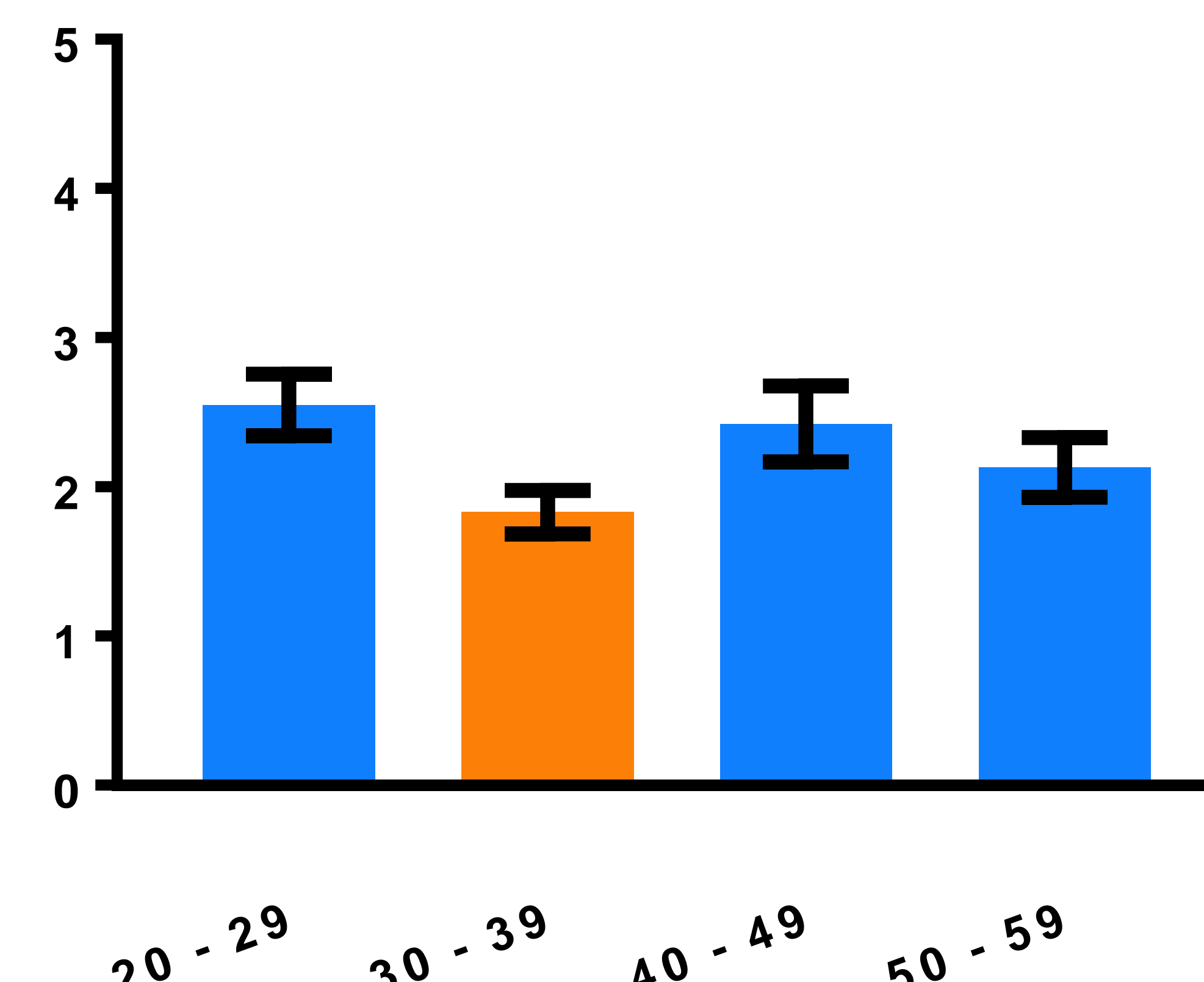
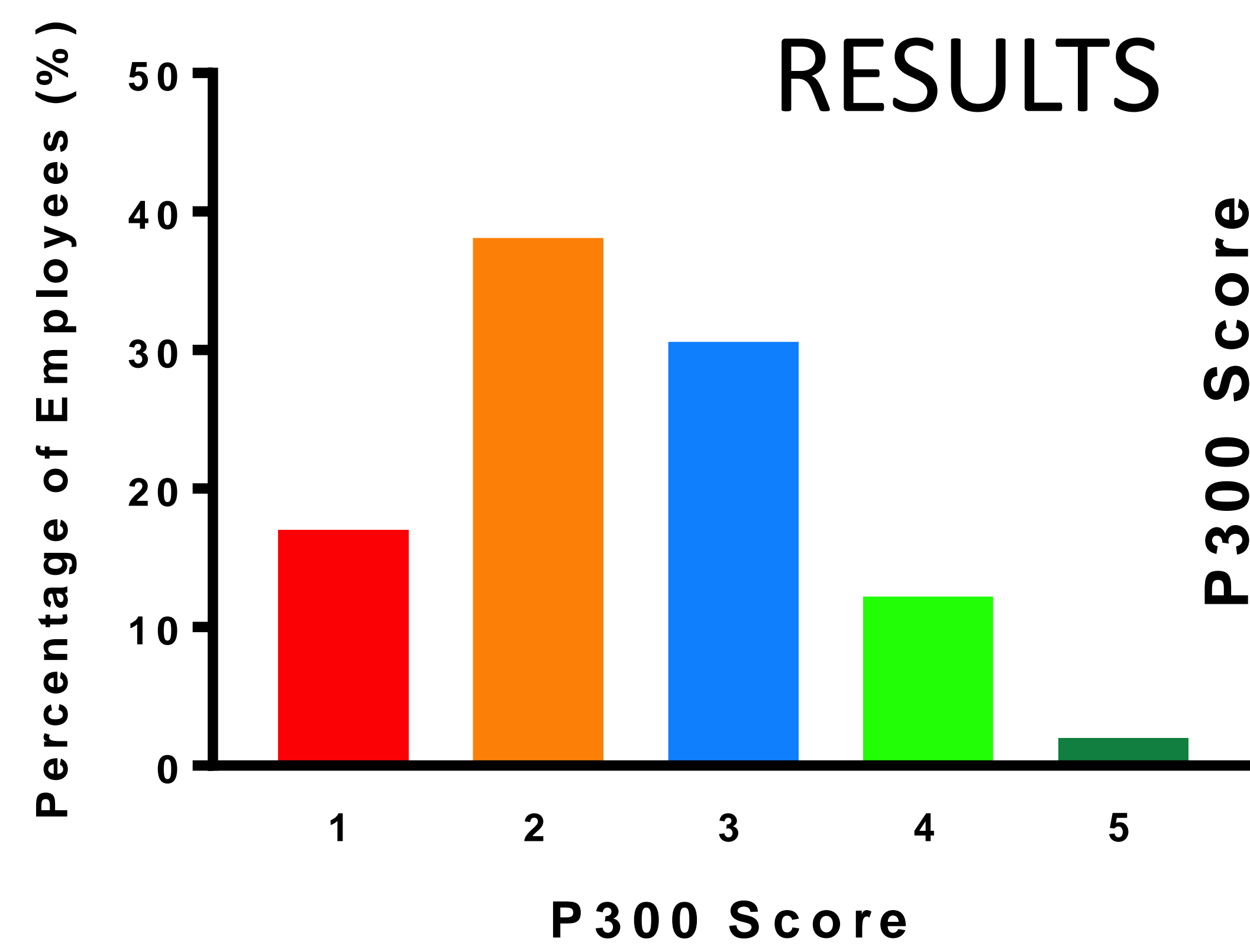
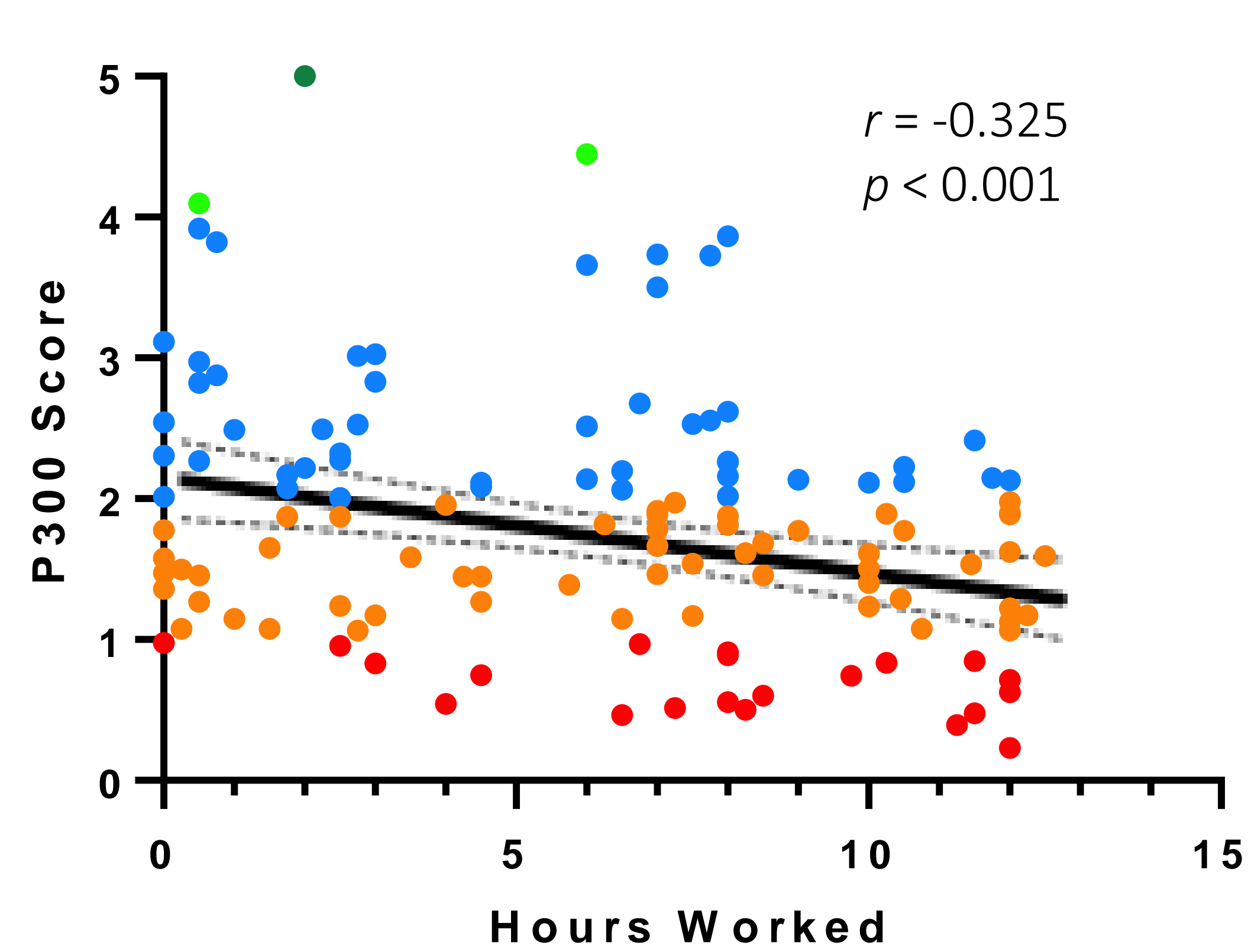
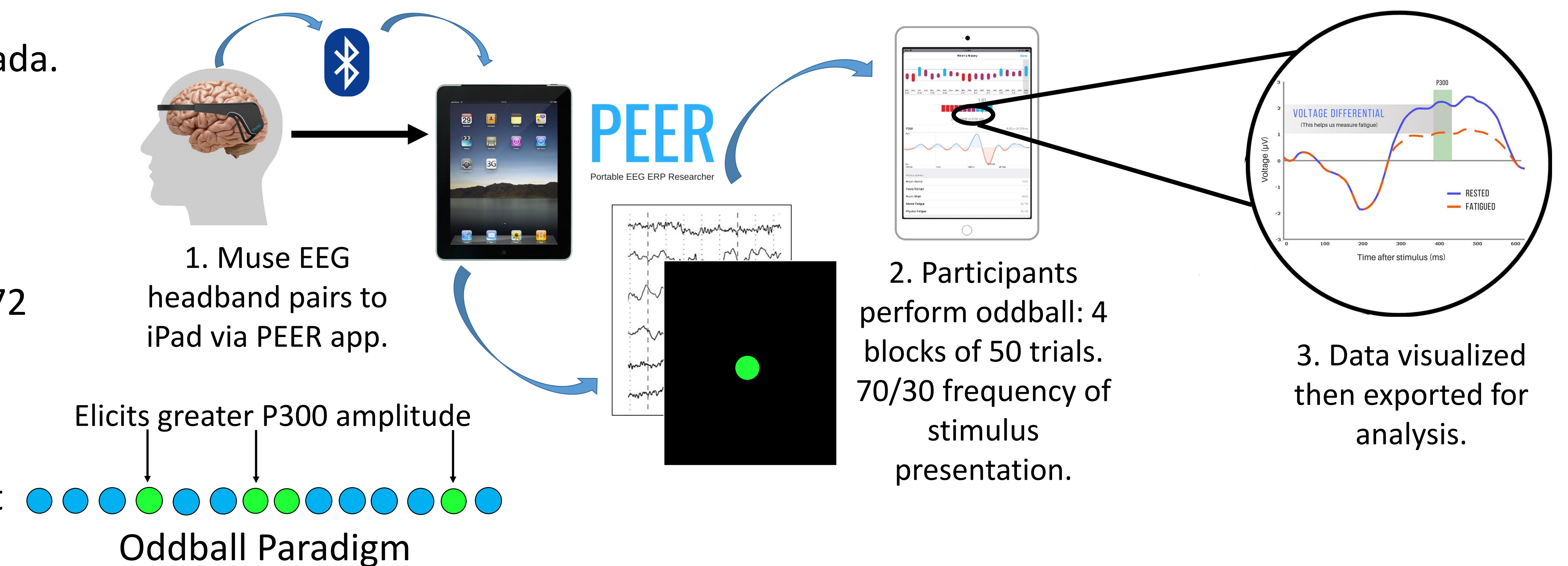
- Fatigue is evident in clinical settings where impairments are comparable to alcohol consumption<sup>1,2</sup>.
- Subjective self-assessment of fatigue has been found to be unreliable<sup>3</sup>; however, one solution could be to use portable electroencephalography measures.
- In the current study, we examined neural responses of emergency clinicians in order to validate portable EEG as a diagnostic tool of fatigue<sup>4</sup>.
- Here, we assessed the P300 elicited by an oddball task.
- Participants performed an oddball paradigm to elicit the P300 – a component reflecting contextual updating<sup>5,6</sup>.
- We highlight the importance of a mobile, physiological measurement of fatigue.

Location: Royal Jubilee Hospital, Victoria, British Columbia, Canada.

Demographic:  
Nurses (n = 48)  
Doctors (n = 9)  
Testing times: 72 hours on site.

Pre-shift, Mid-Shift, Post-Shift recordings.

## METHODS



## CONCLUSIONS

- Pre-Shift and Post-Shift differences in P300 scores are presented.
- A skewed distribution of P300 scores is shown across clinicians.
- Correlation shows a decrease in P300 scores at the end of shifts.
- Further investigation may involve examination of shift rotation.
- Current results indicate emergency clinicians are more likely to be in a fatigued state.
- Data quality also demonstrates a reliable method of assessment.

1. Arnedt, J. T., Owens, J., Crouch, M., Stahl, J., & Carskadon, M. A. (2005). *Jama*, 294(9), 1025-1033. 2. Dawson, D., & Reid, K. (1997). *Nature*, 388(6639), 235. 3. Howard, S. K., Gaba, D. M., Rosekind, M. R., & Zarcone, V. P. (2002). *Academic Medicine*, 77(10), 1019-1025. 4. Krigolson, O. E., Williams, C. C., Norton, A., Hassall, C. D., & Colino, F. L. (2017). *Frontiers in neuroscience*, 11, 109. 5. Nieuwenhuis, S., Aston-Jones, G., & Cohen, J. D. (2005). *Psychological bulletin*, 131(4), 510. 6. Polich, J. (2007). *Clinical neurophysiology*, 118(10), 2128-2148.