The Effects of Background Alpha on Baseball Performance

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INTRODUCTION

Baseball Performance

- Is it possible to know who will be the best batters on a baseball team for each game?
- If so, managers would have the ability to play only the best players in any given game.
- This allows for players to be chosen on skill rather than popularity.

Alpha Activity

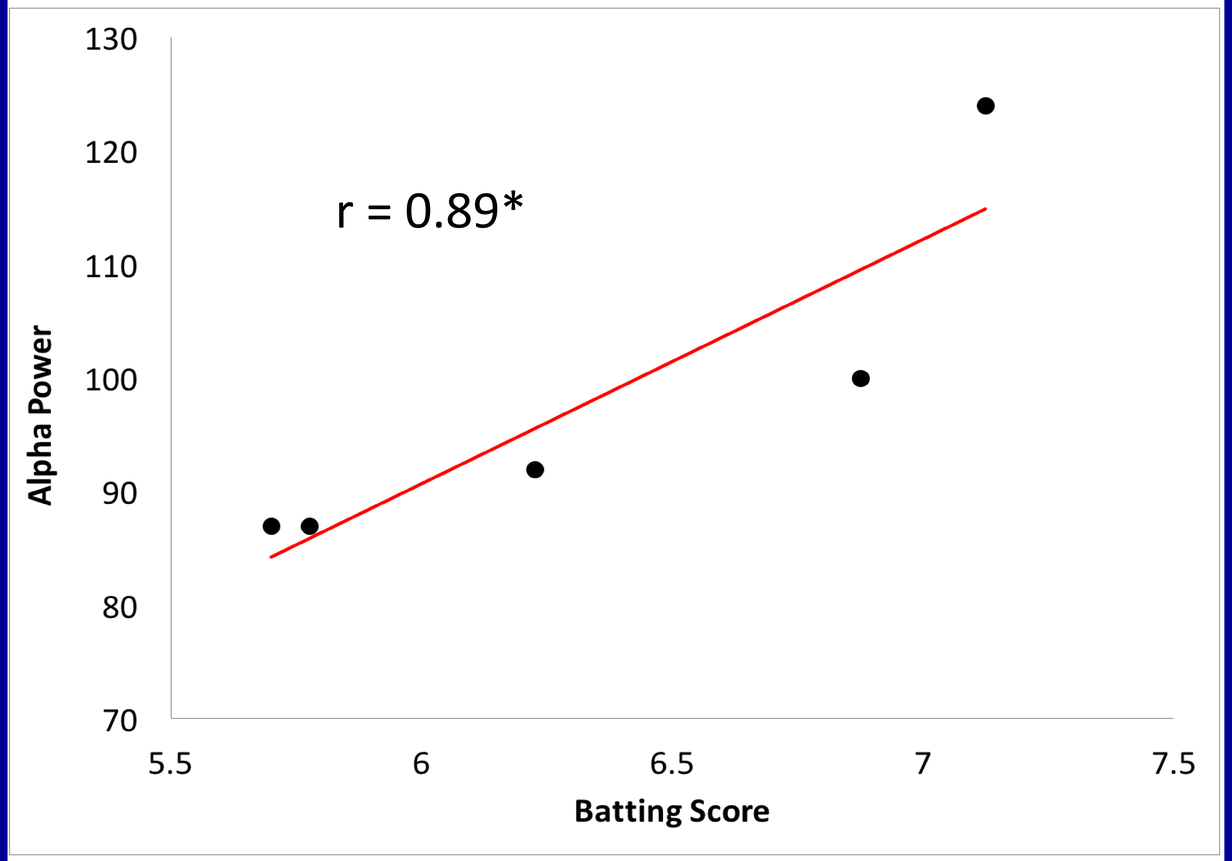
- Electroencephalography (EEG) studies have used alpha band frequencies to predict performance.
- Research has demonstrated increased performance as a function of neurofeedback alpha training; however, what drives this improvement is unclear (Gruzelier, 2014).
- Mathewson et. al. (2012) determined that alpha power predicted video game performance and concluded that alpha activity reflected cognitive control.

Research Interest

To determine whether alpha band frequencies can be a predictor of batting performance by using a portable EEG system to monitor a player's background alpha prior to practice.

RESULTS

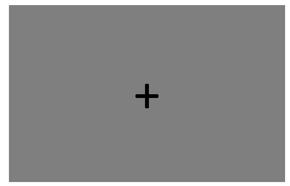
Correlational Data



Individual Data

Player	Form	Contact	Power	Recognizing Pitches	Batting Score	Frontal Alpha
1	5.6	6.3	5.6	5.6	5.775	87
2	7.3	6.0	4.3	7.3	6.225	92
3	6.3	5.6	5.3	5.6	5.700	87
4	7.6	7.3	6.3	7.3	7.125	124
5	6.3	7.0	7.6	6.6	6.875	100

METHOD



Participants stared at fixation while counting back in 7's starting at 1000.

Their batting performance was then rated by three individual baseball coaches.

CONCLUSIONS

- Alpha power was a predictor of batting performance.
- Variance Explained (r^2) = .80
- Further research may indicate that this measure may be useful in assessing the performance of professional baseball players.

REFERENCES

Gruzelier, J. H. (2014). EEG-neurofeedback for optimising performance. I: A review of cognitive and affective outcome in healthy participants. *Neuroscience & Biobehavioral Reviews*, *44*, 124-141.

Mathewson, K. E., Basak, C., Maclin, E. L., Low, K. A., Boot, W. R., Kramer, A. F., ... & Gratton, G. (2012). Different slopes for different folks: Alpha and delta EEG power predict subsequent video game learning rate and improvements in cognitive control tasks. *Psychophysiology*, *49*(12), 1558-1570.

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