

CAN INGESTING RED BULL ENERGY DRINK MODIFY SPORT PERFORMANCE, PRECOMPETITIVE SPORT EMOTIONS AND ANXIETY LEVELS?



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Abstract

This double blind true experiment tested Red Bull energy drink for ergogenic benefit on sport performance, precompetitive sport anxiety and sport emotions in a between groups, placebo controlled study. Quantitative analysis detected no significant differences between the Red Bull condition and the placebo condition, on five hypotheses.

Introduction

The aim was to examine the effects of ingesting Red Bull on sport performance, precompetitive anxiety levels and sport emotions, by manipulating two conditions, the Red Bull condition and placebo condition. Also to assess how precompetitive negative emotions and anxiety levels predict sport performance.

Energy drinks typically contain high amounts of caffeine, sugars and nutrients which purport to improve performance, attention, alertness and perceptions of energy (Campbell et al, 2013). These ingredients exhibit interesting pharmacodynamics on the human body.

Research by Alford, Cox and Wescott (2001) used similar parameters to the present study, based on a 250ml dosage of Red Bull energy drink and the time elapsed to reach plasma concentrations was 30 minutes. They reported significant increases in aerobic and anaerobic performance on a cycle task and improved mood, compared with other control drinks. In contrast, more recent research by Astorino et al, (2012) shows ingesting a 250ml dosage of Red Bull energy drink at plasma concentrations at 60 minutes in a randomised placebo controlled cross over study resulted in no significant effect on repeated sprint exercise, compared to placebo.

This study will assist competitive and recreational athletes and coaches in their decision making processes around ingesting Red Bull from a highly driven market which claims to offer ergogenic benefits.

Experimental Hypotheses

There will be a significant difference in the Red Bull condition over the placebo condition on ...

- ... Physical sport performance (H1).
- ... Precompetitive anxiety (H2).
- ... Precompetitive negative sport emotions (H3).
- ... Precompetitive positive sport emotions (H4).

Precompetitive negative emotions and anxiety levels will significantly predict sport performance (H5).



Methods

A non-probability, convenience sample of 41 (16 female and 25 male) participants were recruited from local athletic and triathlon clubs. Participants ranged in age from 18 – 63 years (mean = 39, SD = 10.49) were randomised into two groups prior to the experiment. The sample makeup of each group consisted of Group A (placebo condition) N= 20 participants (8 female and 12 male) and Group B (Red Bull condition) N= 21 participants (8 female and 13 male) This reflected true random assignment.

Each participant ingested either 250ml of Red Bull energy drink or 250ml of placebo drink from identical coffee cups, with lids. Thirty minutes post ingestion all participants completed the Sport Emotion Questionnaire (SEQ) (Jones, Lane, Uphill and Catlin, 2005) and the Sport Competition Anxiety Test (SCAT) (Martens, 1977). Proceeded by a timed 5km run. Scores were statistically analysed and the mean differences compared across the two conditions.

Results

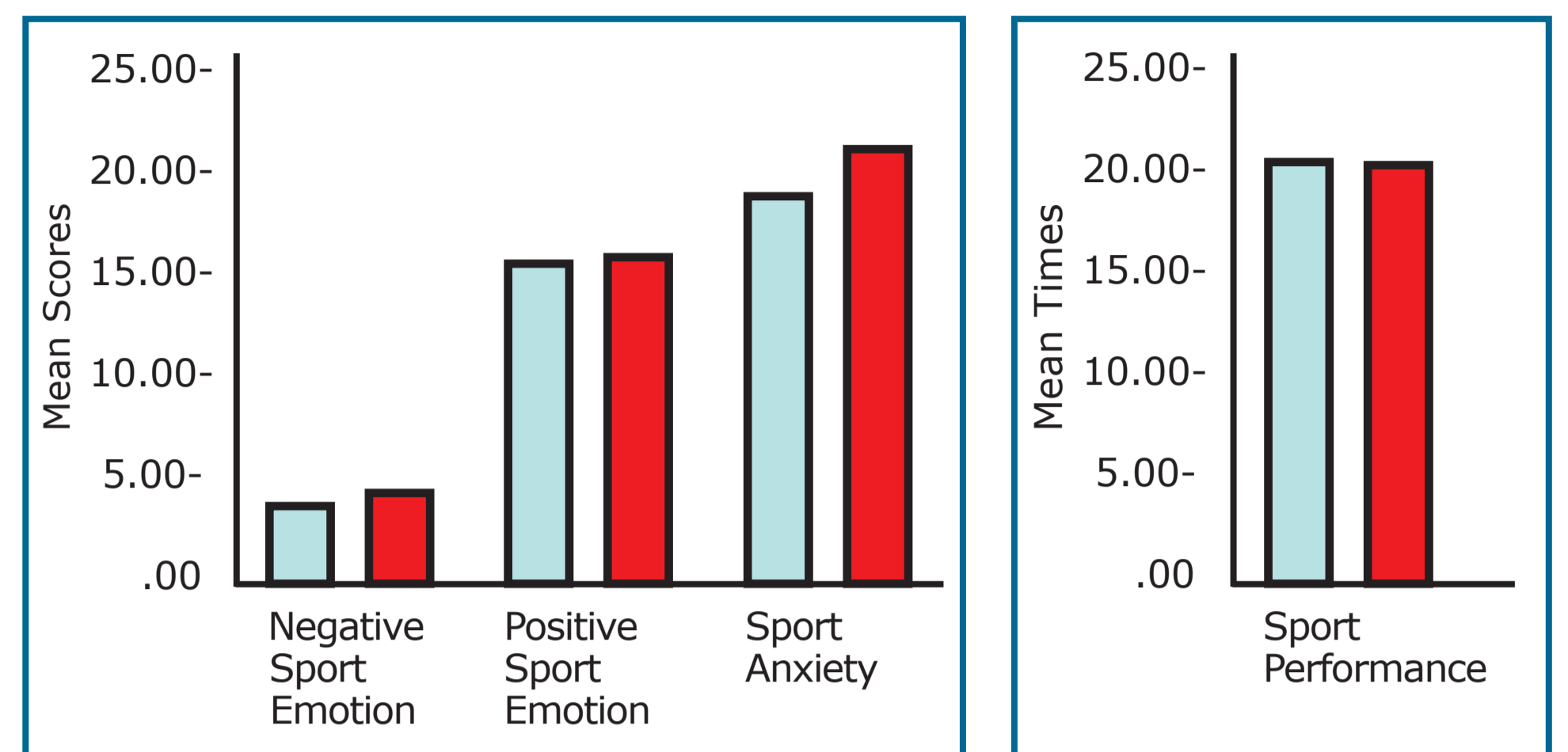


Figure 1. Mean scores for Negative and Positive Sport Emotion & Sport Anxiety. Mean times for Sport Performance in the Red Bull and placebo condition.

Table 1. Results of Mann Whitney U Tests on Sport Performance, Negative Sport Emotion and Positive Sport Emotion.

Variable	Group	Mean Rank	U	Sig
Sport Performance	Red Bull	19.14	171.00	.309
	Placebo	22.95		
Neg. Sport Emotion	Red Bull	21.74	194.50	.683
	Placebo	20.23		
Pos. Sport Emotion	Red Bull	21.69	195.50	.704
	Placebo	20.28		

Table 2. Results of Independent Samples t. test on Sport Anxiety.

Variable	Group	Mean	SD	T	df	Sig
Sport Anxiety	Red Bull	21.25	4.67	-1.41	38	.167
	Placebo	18.95	5.62			

Table 3. Results of Multiple Regression test on Negative Sport Emotion and Sport Anxiety in predicting Sport Performance.

Predictor Variables	Criterion Variable	B	Sig	CI
Neg. Sport Emotion	Sport Performance	.22	.243	-.11-.44
Sport Anxiety		-.10	.590	-.31-.18

Discussion

Athletes assuming that Red Bull will enhance performance regardless of sport modality has been shown to be incorrect, in this ecological field experiment. Though acknowledging a 30 minute ingestion period may be a limitation. Results show athletes may feel both positive and negative precompetitive sport emotions at the same time, while operating within unique individual zones of optimal anxiety functioning. Results show no causal relationship between precompetitive negative sport emotions and anxiety predicting sport performance. Gender differences across precompetitive anxiety and sport emotion are trending in the same direction which may warrant further investigation.

References

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