9-1-2012

The Effects of a Caffeine-Containing Beverage on Muscular Performance and Mood During the Squat Jump Exercise

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Outline

- Introduction
- Methods
- Results
- Discussion
- Practical applications

Introduction

- Ergogenic aid
- Common ingredients
- Endurance and mood
- Anaerobic exercise and resistance training
- Controversies

Purpose & Hypothesis

- The purpose of this study is to investigate the effects of an over-the-counter, high- energy supplement on physical performance and mood during the squat jump exercise

- We hypothesize that supplementation will improve anaerobic performance and mood during the squat jump exercise, compared to placebo

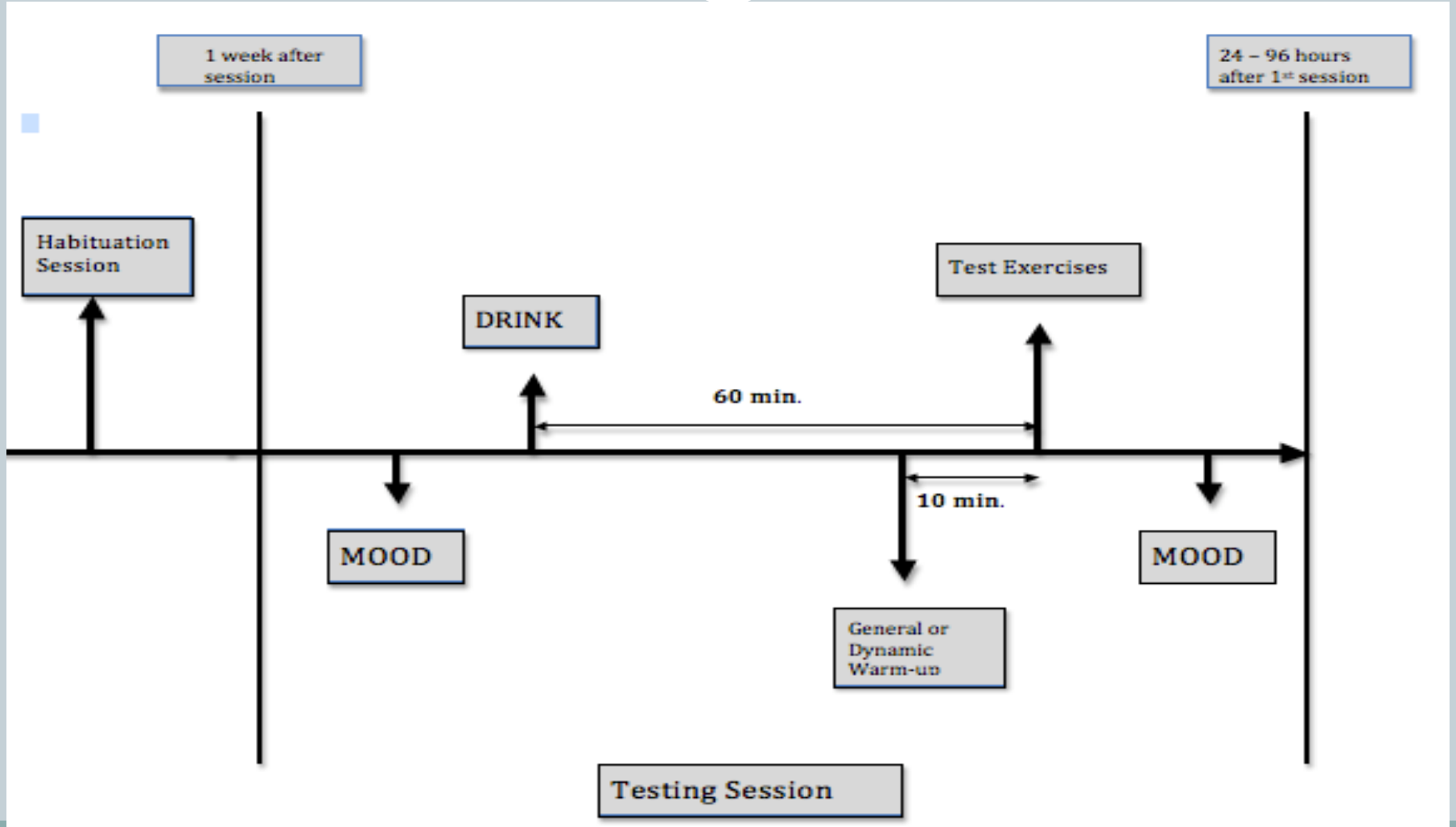
Methods

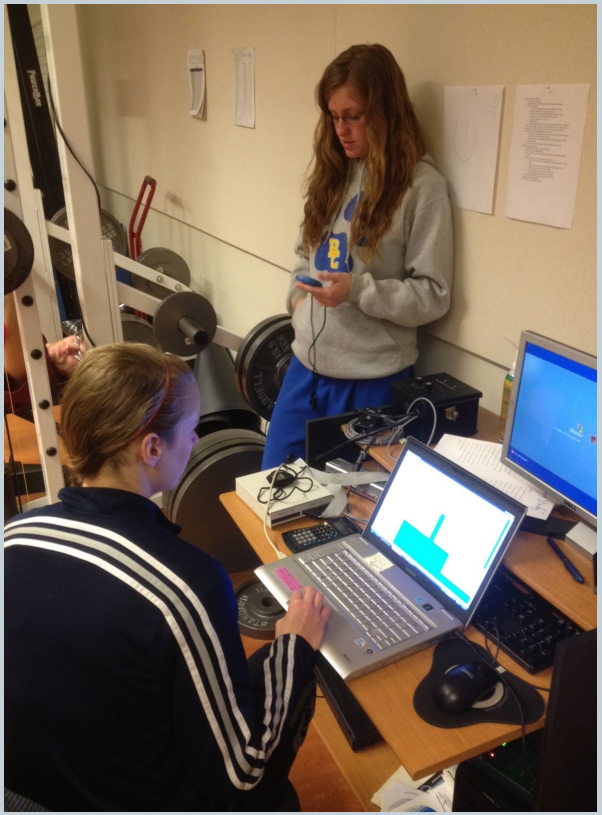
- Double-blind, placebo-controlled randomized crossover design
- Conditions: Redline ® energy drink and Placebo
- 17 recreationally active individuals
- Exclusion criteria

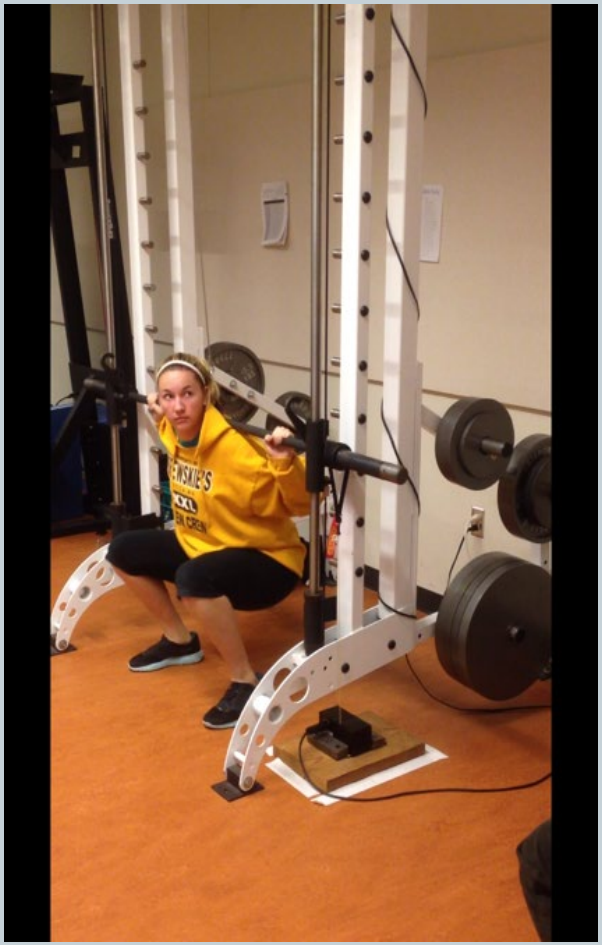
Table 1. Participant Characteristics (n = 17)

Variable	**Mean ± SD**
Age (yrs)	21.1 ± 1.2
Weight (kg)	72.30 ± 10.86
Height (cm)	176.54 ± 8.68
% Body Fat	18.9 ± 8.8
Fat Mass (Kg)	13.54 ± 5.42
Fat Free Mass (kg)	51.13 ± 13.99
* yrs = years; kg = kilograms; cm = centimeters	

Methods - Procedure







Methods – Statistical Analysis

- Matched pairs t-tests
- JMP Pro 10 software (Stéphane Sudre, SAS Institute Inc., Version 10.0).
- Statistical significance was set at a p value of ≤ 0.05
- p-value between 0.05 and 0.10 was considered a trend in the data.

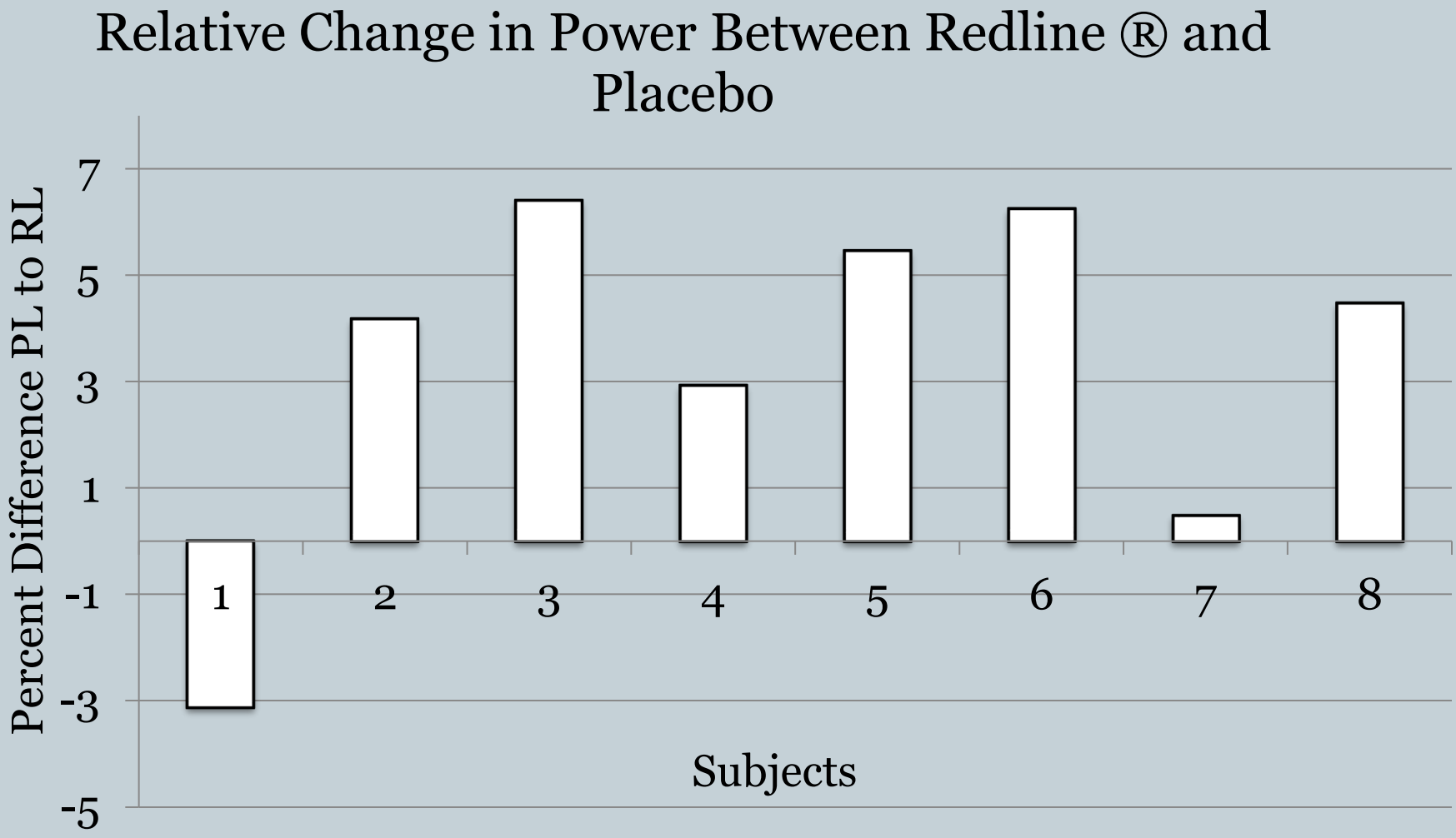
Results – Absolute Value

Table 2. The Effects of Redline® Supplementation on Measures of Squat Jump Performance

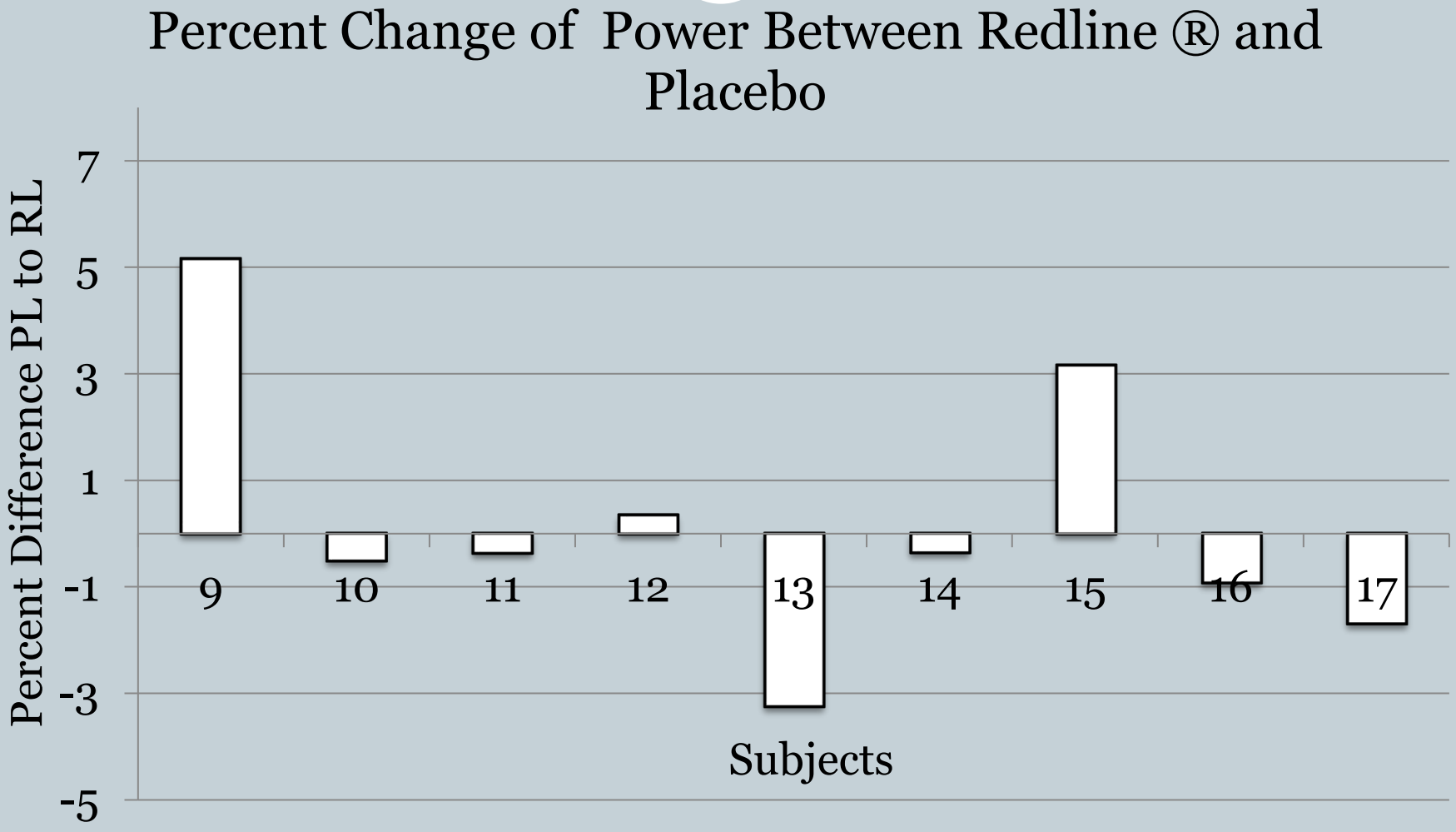
	RL (Drink A)	PL (Drink B)	Difference (RL - PL)
Peak Force (N)	1212.1 ± 225.6	1203.8 ± 222.7	8.318 ± 29.64
Peak Power (W)	2014.1 ±659.0	1977.6 ± 639.6	36.54 ± 73.03 *
Peak Velocity (m/s)	2.130 ± 0.393	0.366 ± 0.366	0.027 ± 0.072
Peak Displacement (m)	0.877 ± 0.150	0.870 ± 0.140	0.002 ± 0.082

* Considered a trend in the data of Redline versus Placebo ($p < 0.10$)
RL = Redline ® PL = Placebo

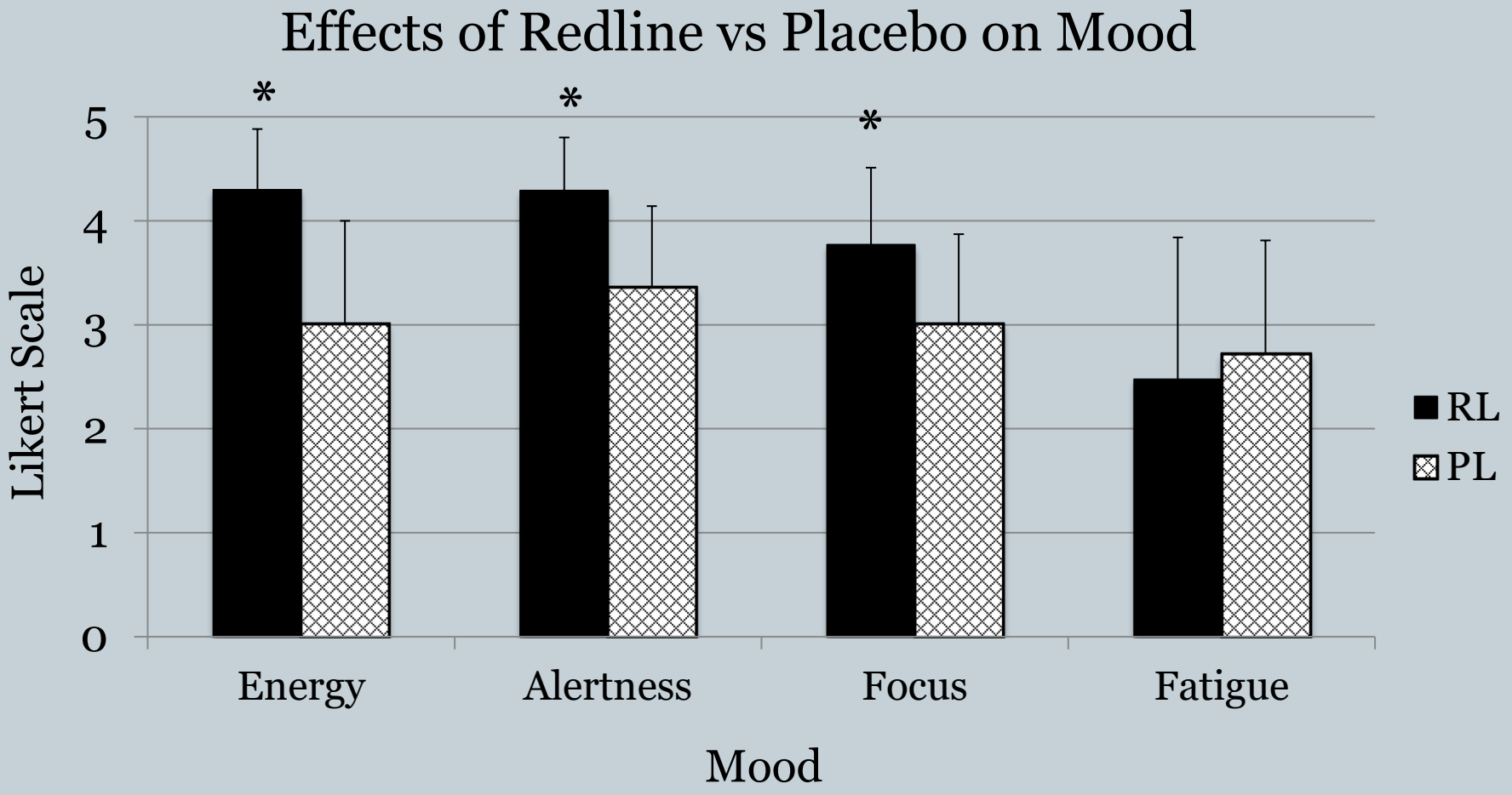
Results – Percent Change



Results Cont'd



Results - Mood

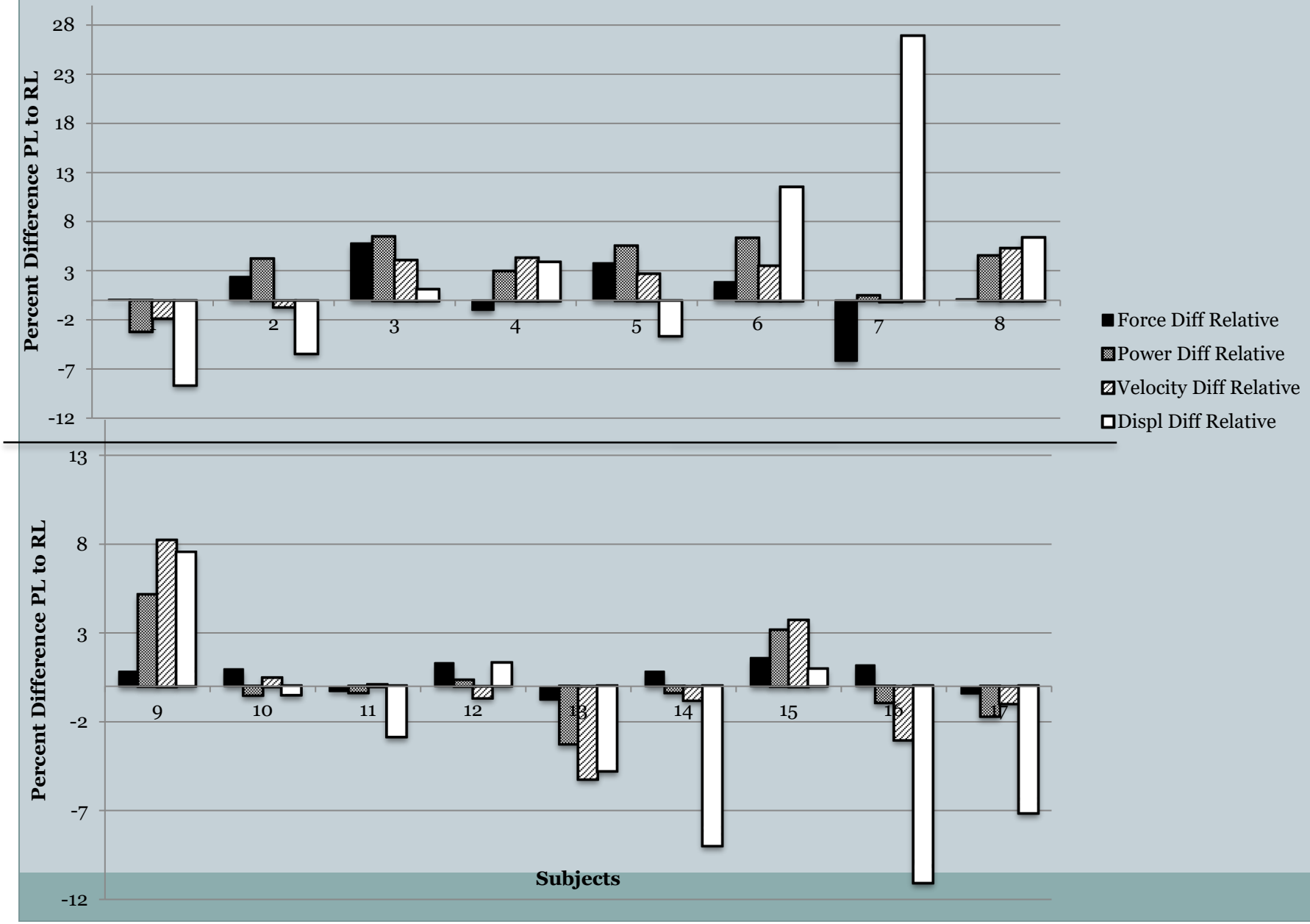


* Considered a trend in the data of Redline versus Placebo

Discussion

- Changes found in mood similar to most studies (4, 5)
- Power findings comparable to similar studies (7, 8, 9), but not all (3, 5, 6)
- Responders vs non-responders

Relative Change in Performance Variables Between Redline ® and Placebo



Discussion

- Caffeine habituation
- Adverse effects (2)
- Training status (1)

Limitations

- Training status controls
- Dietary controls
- Fixed amount of caffeine and energy drink
- Proprietary blend

Practical Applications

- Maximizing training and performance
- Things to consider:
  - Drink timing and sleep
  - Potential response differences due to caffeine tolerance/habituation and training status
    - Hamper performance for non-responders

Conclusion

- Redline ® energy drink may:
  - Improve power, but not velocity, force, and displacement
  - Increase focus, alertness, and energy, but not fatigue
- Consumption may lead to enhanced training or performance
- Future research

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Questions?