



Food, Fluid and Dietary Supplement Use Relative to Daily Physical Training in Navy SEAL Operators



Kim Beals, Matthew E. Darnell, John P Abt, Timothy C. Sell, Mita Lovalekar, Rachel Baker, Scott M. Lephart, FACSM
School of Rehabilitation Sciences, Department of Sports Medicine and Nutrition, University of Pittsburgh, Pittsburgh, PA

ABSTRACT

Proper nutrition plays an important role in optimizing performance and recovery from daily rigorous Special Operations training. **PURPOSE:** To evaluate food, fluid and dietary supplement habits of SEAL Operators relative to training activities. **METHODS:** A total of 215 Operators (Age: 29.7±6.8 years; Mass: 85±9.1 kg; Body Fat: 17.5 ± 5.9%) completed a detailed diet history including eating habits, food and fluid intake, and dietary supplement use. **RESULTS:** Fluids were consumed in 97% of Operators before physical training (PT), 96% during PT, and 99% following PT. Top beverage choices before PT were water (69%), water+sports drink (13%) and water+pre-workout supplement (6%); during PT water (77%), water+sports drink (12%), sports drink only (5%); and after PT water (41%), water+sports drink (17%), sports drink+protein (16%), and sports drink only (10%). Food was consumed by 72% of Operators before PT and 89% following PT (73% <1 hour, 23% 1-2h, 2% > 3 h, 2% n/a). Of these, 75% ate a snack or meal with carbohydrate (CHO) and protein (Pro), 15% with only Pro and 6% with only CHO. Use of at least one dietary supplement was reported by 64% of the Operators (63% vitamin/mineral, 62% protein-energy drinks, 36% fish oils/antioxidants, 23% joint health, 17% nitric oxide, 14% creatine). Main reason for supplement use was to feel more energized. **CONCLUSION:** Our findings suggest that SEAL Operators practice adequate hydration before, during and after exercise. Water is the preferred beverage during PT. If PT lasts longer than 60 minutes, it may be more beneficial to consume fluids with CHO and electrolytes. Following PT, a beverage with CHO, Pro and electrolytes will expedite fluid restoration and muscle recovery. The majority of Operators consume a post-training snack within 60 minutes following PT. However, 25% are consuming a snack of either solely Pro or CHO. Ideally, consuming foods/fluids that contain a moderate amount of CHO and a small amount of Pro will expedite muscle glycogen restoration and help reduce muscle protein breakdown. This is especially important for Operators participating in subsequent training bouts and/or missions. Future research should focus on examining the use of foods, fluids, and nutrient timing as a means to energize for and help recover from daily hard physical training.

INTRODUCTION

- Proper nutrition plays an important role in optimizing performance and recovery from daily rigorous physical training.
- The purpose of this study was to evaluate food, fluid, and dietary supplement habits of SEAL Operators relative to training activities.

SUBJECTS

- A total of 215 Operators (Age: 29.7±6.8 years; Mass: 85.9±9.1 kg; Body Fat: 17.5±5.9%) completed a detailed diet history including eating habits, food and fluid intake, and dietary supplement use.



EXPERIMENTAL DESIGN AND METHODS

METHODS

BODY COMPOSITION TEST

- Body composition was assessed with The BodPod Body Composition System (Cosmed, Chicago, IL) through air displacement plethysmography.
- Body mass (kg) and percent body fat (%BF) were used for a final analysis.

DIETARY ASSESSMENT

- Subjects completed a detailed diet history with a food frequency questionnaire. The questionnaires were customized to address the pertinent dietary issues and food preferences of Navy SEAL Operators. The detailed diet history included questions pertaining to frequency of meals, meals eaten outside the home, caffeine and alcohol habits, and food/fluid intake before, during, and after physical training.
- Subjects responded to a comprehensive Dietary Supplement Survey to evaluate dietary supplement habits on base and when deployed. The Dietary Supplement Survey tool was developed by investigators to address the pertinent nutrition issues and dietary supplement usage of military personnel using data from our ongoing research with the Department of Defense and recommendations provided by the Committee on Dietary Supplement use by Military Personnel and the Institute of Medicine. Subjects completed questions regarding dietary supplement usage (frequency, dosage, duration, and administration), reasons for use, adverse reactions, and perceived benefits.
- A 24 hour recall was collected and analyzed using Food Processor SQL 10.6 (ESHA) to assess macro- and micronutrient content of the diet. Subjects were asked to report everything that they ate and drank from the previous day, with the assistance of food models, measuring utensils, and tableware to illustrate portion sizes.



Figure 1. SEAL Operator

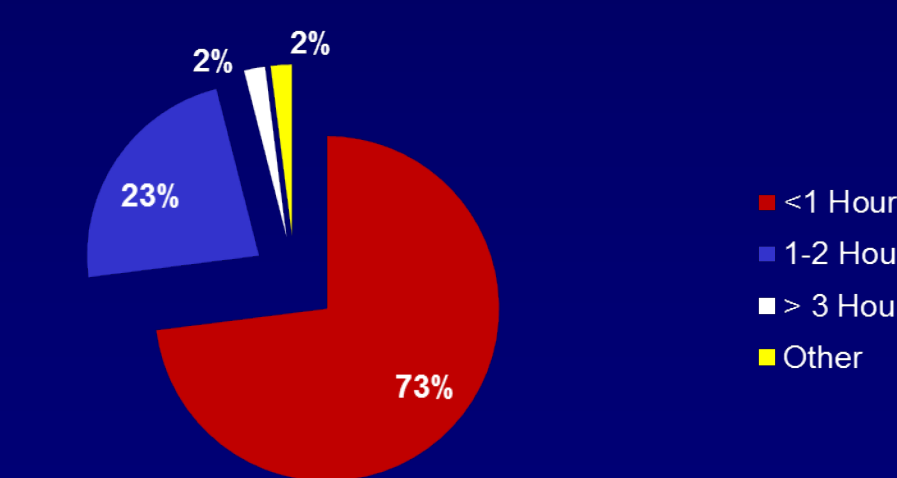


Figure 2. Dietary Supplements Available on Base

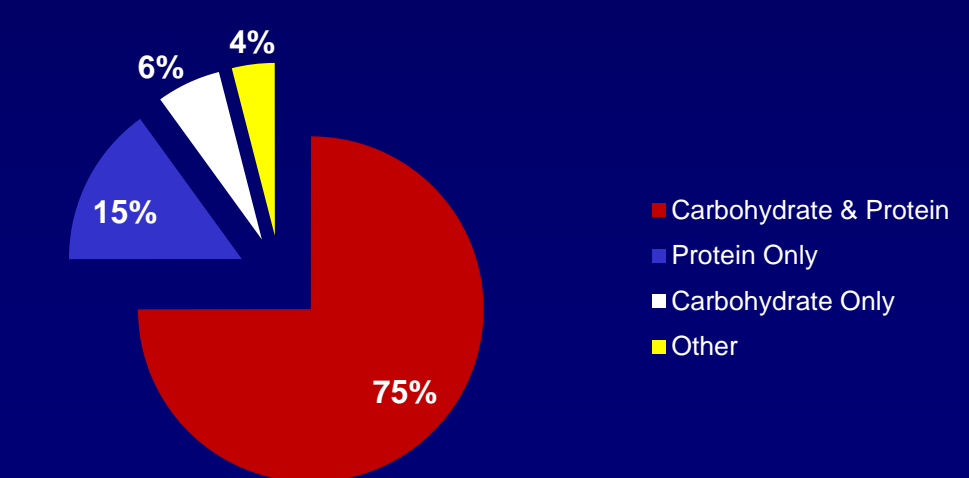
RESULTS

89% of SEAL Operators Report Consuming a Recovery Feeding

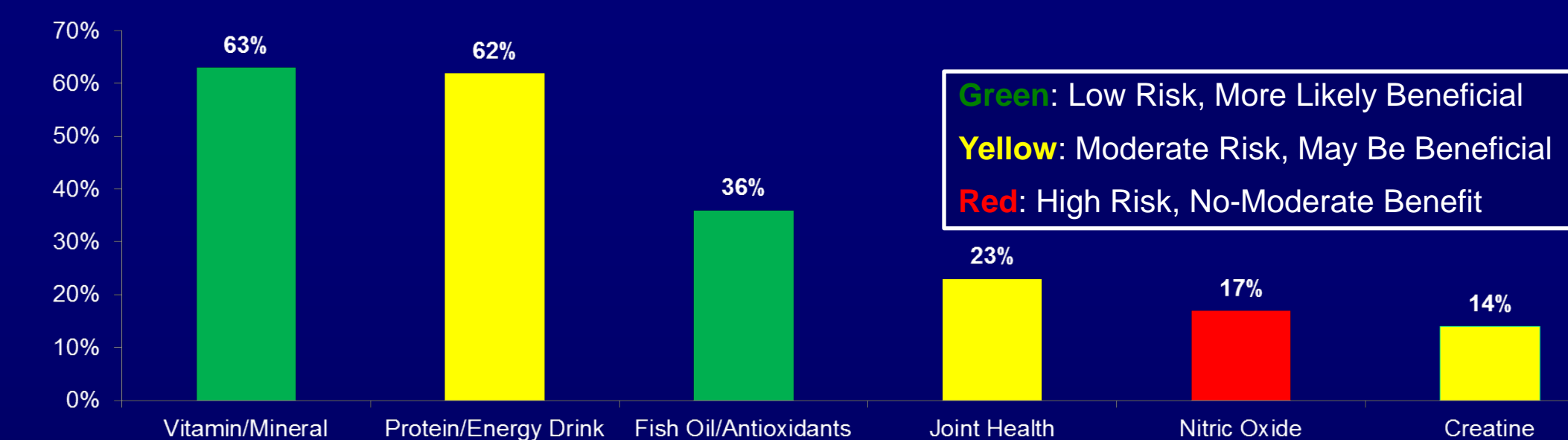
Timing of Recovery Feeding



Composition of Recovery Feeding



64% of Operators Report Taking at Least One Dietary Supplement



SUMMARY AND CONCLUSIONS

- Findings suggest SEAL Operators practice adequate hydration before, during, and after exercise.
- ~75% of Operators consume a post-training snack within 60 minutes following PT and it contains both CHO and Pro. For optimal muscle recovery, food and or fluids should be consumed immediately following PT and contain both CHO and Pro.
- 64% of SEAL Operators report taking at least one dietary supplement.
- Top reason for supplement use is to increase energy, feel energized.
- Future research should focus on examining the use of foods, fluids, and nutrient timing as a means to energize for and help recover from daily hard physical training

This work was supported by the Department of the Navy, Office of Naval Research (#N00014-11-1-0929). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Office of Naval Research.