



# Navy SEALs Dietary Intakes Compared to Sports Nutrition Recommendations and 2010 Dietary Guidelines for Americans



Matthew E. Darnell, Kim Beals, John P. Abt, Timothy C. Sell, Scott M. Lephart, FACSM.  
Department of Sports Medicine and Nutrition, University of Pittsburgh, Pittsburgh, PA

## ABSTRACT

Sports nutrition recommendations were developed to provide optimal nutrition for athletic performance. The 2010 Dietary Guidelines for Americans (DGA) were developed to improve health through nutrition guidelines for disease risk reduction and health promotion. Both of these may be used as a guide for SEALs to ensure proper nutrition to optimize physical readiness, performance, and long term health. **PURPOSE:** To compare dietary intakes of SEALs to sports nutrition recommendations and the 2010 DGA. **METHODS:** A total of 215 SEALs (age: 29.7 ± 6.8 yrs, weight: 85.8 ± 9.1 kg, body fat: 17.5 ± 5.9%) completed a 24 hour diet recall. Intake was assessed using dietary analysis software. **RESULTS:** Calorie (kcal), protein, carbohydrate (CHO), and fat intake was 2,775 ± 883, 152 ± 62g, 314 ± 113g, and 98 ± 50g respectively. Fat intake >30% kcal was found in 52% of SEALs, with 40% consuming >10% kcals from saturated (sat) fat. Cholesterol intake was 434.5 ± 337.0 mg, with 54% consuming > 300mg. **CONCLUSIONS:** Findings suggest SEALs do not consume adequate CHO and other key nutrients to meet the demands of physical training and to optimize overall health. Increased consumption of CHO (e.g. whole grains, fruits, vegetables, low-fat dairy) while reducing fat and sat fat intake may optimize physical readiness, performance, and health in SEALs. Except for calcium, most SEALs failed to meet nutrient guidelines for health promotion and disease risk reduction. Many SEALs consumed diets high in fat, sat fat, and cholesterol, which can increase risks for cardiovascular disease. Future research should examine methods to modify eating habits of SEALs to meet their unique demands of training while improving overall health and longevity.

## INTRODUCTION

- Training and tactical demands of Naval Special Warfare (NSW) Sea, Air, and Land (SEAL) Operators have been likened to those of elite athletes, with similar performance and nutrition needs
- Evidence based sports nutrition recommendations have been developed to provide optimal nutrition for athletic performance. Additionally, the 2010 Dietary Guidelines for Americans (DGA) have been developed to improve the health of our Nation's population through nutrition guidelines focusing on health promotion and disease risk reduction
- Both recommendations may be used as a guide for operators with increased physical demands to ensure proper nutrition to optimize physical readiness, performance, and long term health

## PURPOSE

- To compare dietary intakes of SEAL Operators to sports nutrition recommendations and the 2010 Dietary Guidelines for Americans

## EXPERIMENTAL DESIGN AND METHODS

### SUBJECTS

- 215 male active duty SEAL Operators
  - Age: 29.7 ± 6.8 years
  - Height: 1.78 ± 0.06 m
  - Weight: 85.8 ± 9.1 kg
  - Body Fat: 17.5 ± 5.9%

### EQUIPMENT

- Diet analysis software (The Food Processor SQL, ESHA Research, Salem, OR)

### PROCEDURES

- Anthropometric measurements were taken on the same day as the 24 hour recall
- Dietary intake was assessed using a 24 hour food recall. Operators were asked to write down 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 2)
- 24 hour recall data was analyzed for macro/micronutrients and compared to standards set by the ADA and ACSM Nutrition and Performance position Stand and the 2010 Dietary Guidelines for Americans

### DEPENDENT VARIABLES

- Total energy (kcal), carbohydrate (g), protein (g), fat (g), saturated fat (g), fiber (g), cholesterol (mg), potassium (mg), calcium (mg), and vitamin D (IU)
- Percent of calories from carbohydrate, protein, fat and saturated fat
- Grams of carbohydrate and protein per kg of body weight

### STATISTICAL ANALYSIS

- Descriptive statistics
  - Mean and standard deviations
  - Proportions



Figure 1. US Navy SEALs



Figure 2. Food models, measuring utensils, and tableware

## RESULTS

- On average SEALs consumed 2,775 ± 883 calories, 152 ± 62g protein, 314 ± 113g carbohydrate, and 98 ± 50g fat
- Fat intake >30% kcal was found in 52% of SEALs, with 40% consuming >10% kcals from saturated (sat) fat.
- Cholesterol intake was 434.5 ± 337.0 mg, with 54% consuming > 300mg
- SEALs intakes compared to goal amounts are displayed in Table 1

Table 1: SEALs Intake of Nutrients Compared to 2010 DGA and Sports Nutrition Guidelines

Nutrient	Goal Amount	SEALs Intake (mean ± SD)	SEALs < Goal Amount
Carbohydrates (g/kg)	≥ 5	3.7 ± 1.37	86%
Protein (g/kg)	1.2-1.7	1.78 ± 0.77	19%
Potassium (mg)	4,700	2,360.3 ± 1,454.1	96%
Dietary Fiber (g)	38	26.7 ± 15.5	82%
Calcium (mg)	1,000	1,135.2 ± 709.0	48%
Vitamin D (IU)	600	183.7 ± 230.1	94%

## SUMMARY AND CONCLUSIONS

- Results suggest SEALs do not consume adequate CHO and other key nutrients to meet the demands of physical training and to optimize overall health
- Except for calcium, most SEAL Operators failed to meet nutrient guidelines for health promotion and disease risk reduction. Many Operators consumed diets high in fat, sat fat, and cholesterol, which can increase risks for cardiovascular disease
- Future research should examine methods to modify eating habits of SEAL Operators to meet their unique demands of training while improving overall health and longevity

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