Eating for Health, Fitness and Performance

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ABSTRACT

Introduction: The healthy, fitness and performance plates were developed from the Athlete's Plate labeling system to better serve a general, student population. The healthy plate is for students trying to live a healthy lifestyle, the fitness plate is for students trying to live a healthy and active lifestyle and the performance plate is for students involved in athletics or competitive sports. **Purpose**: To assess student knowledge of the healthy, fitness and performance plates and its efficacy as an educational tool in the UCCS dining halls. **Methods**: 17 UCCS students were asked to listen to a 30 minute presentation regarding the plate system and take a survey to assess knowledge. Students were then created a plate based off of which they associate with and the palates were graded on a scale of 1-3. Students participated in a 8-10 person focus group. **Results**: Of the 17 participants [age 23.1 ± 3.0y; gender n=8 (47%) male, n=9 (53%) female; undergraduate student 8(47%), graduate student 7(41%), and other (2%)] an average survey score and plate score was found to be 84.2±8.6 and 85.3±20.3, respectively. Of all respondents, 100% (n=17) achieved a passing score on the survey (70%) and 88% on the plate score (70%). There was no significance found comparing male and female survey score (p=.405) and plate score (p=.113) as well as undergraduate and graduate students survey score (p=.754) and plate score (p=.365). Qualitative themes were found from significant statements in focus groups and summarized in Table 4. **Conclusion:** The healthy, fitness and performance plate system is a good educational tool to help teach students about how to eat healthy, appropriate portions for their activity level and how to build a plate in the UCCS dining halls.

INTRODUCTION

- In 2014, the Athlete's Plate (AP) system was designed by the Sport Nutrition Graduate Program at the University of Colorado, Colorado Springs (UCCS) in collaboration with the sport dietitians at the United States Olympic Committee (USOC). As the AP system was designed for athletes, training at easy, moderate, and hard intensities, there is little research on how these plates could relate to the general non-athletic student population.
- Nutrition awareness and education programs may be important mechanisms for promoting nutrition label use among university students (1). Nutrition label use is found to correlate with attitudes towards healthy diet, beliefs around nutrition importance, self efficacy and nutrition knowledge and education (1).
- Traffic light nutrition education systems color coding helps reduce the complexity of decision making when in university settings (2). Compared to healthy-choice indicators that label only healthy items, traffic light labels provide more information to consumers (3).
- The biggest difference between the plates is carbohydrate, protein, fat and vegetable content. For the performance plate, lower fiber foods are the preferred choice before exercise to avoid gastrointestinal issues (4).

Healthy Plate: For students trying to live a healthy lifestyle

Fitness Plate: For students trying to live a healthy and active lifestyle

Performance Plate: For students involved in athletics or competitive sports

PURPOSE

The purpose of this study was to

- Rebel the AP system to target a more general student population. Thus, healthy, fitness and performance plates were used as labels in place of the easy, moderate and hard training plate, respectively
- Evaluate UCCS students' knowledge on the plates
- Evaluate whether UCCS students' correctly use the plates in the dining hall
- Assess if the healthy, fitness and performance plate system is a good educational tool

METHODS

Participants

- A convenience sample (n=17 of UCCS students) recruited from UCCS rec center and UCCS dining halls

Quantitative:

- Post-educational presentation 25 question validated survey (Survey Monkey) to assess demographics and knowledge on plate system

Qualitative:

- Subjects chose plate they associated with and built a plate in the dining hall following health, fitness and performance labeling system
- In-person audio-recorded focus groups to assess knowledge and perception of plate system

Quantitative Analysis (SPSS)

- Descriptive statistics, independent sample t-tests and non-parametric Mann-Whitney U tests

Qualitative Analysis:

- Transcripts of focus groups
- Significant statements and quotes were identified and placed into groups of emerging themes based on frequency

Plate Scoring System:

- Understanding of the overall plate concept
- Composition of plate (carbohydrate, whole grains, protein, vegetable portions)
- Anything else added (oils, dressing, etc.)

Overall impression rated 1-3 points

70% or 2.1/3 points is a passing score

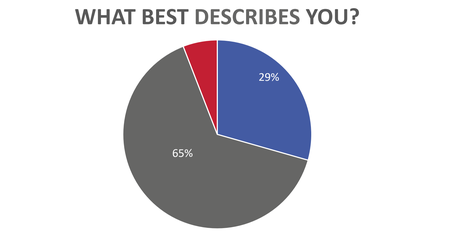
Survey Scoring System:

1 point for each question answered correctly

70% or a 10.5/15 is a passing score

RESULTS

Table 1. Descriptive Data	
Sample n = 17	
Age (years)	23.1 ± 3.0
Gender (n/%)	
Male	8 (47%)
Female	9 (53%)
Year in School	
Undergraduate	8 (47%)
Graduate	7 (41%)
Other	2 (12%)
What Best Describes You	
Health Conscious (Healthy Plate)	5 (29%)
Recreational Athlete (Fitness Plate)	11 (65%)
Competitive Athlete (Performance Plate)	1 (6%)
Plate and Survey Scores	
Survey Score % (mean ± SD)	84.2 ± 8.6
Plate Score % (mean ± SD) (median)	85.3 ± 20.3 (83.3)



Graph 1. Breakdown of Participants

Graph 2 and 3. Survey and Plate Score Results

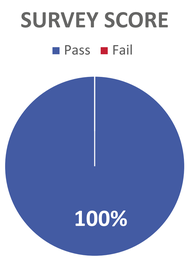


Table 2. Comparing Males vs. Females	Sample	
	(n=17)	
Survey Score n(mean ± SD)		p=.405
Male	8 (84.3 ± 7.3)	
Female	9 (84.2 ± 10.1)	
Plate Score n(median)		p=.113
Male	8 (83.3)	
Female	9 (100.0)	

Table 3. Graduate vs. Undergraduate	Sample	
	(n=15)	
Survey Score n(mean ± SD)		p=.754
Undergraduate	8 (84.1 ± 8.4)	
Graduate	7 (83.9 ± 9.9)	
Plate Score n(median)		p=.365
Undergraduate	8 (83.3)	
Graduate	7 (100.0)	

RESULTS CONT'D.

Plate Score: 100%

Plate Score: 17%

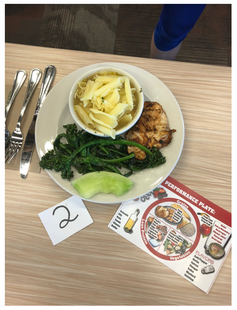


Plate Score: 83%

Table 4. Qualitative Analysis

Question	What Participants Said
Why did you participate in the study?	Educate self on how to eat healthy/for activity
	Free Food at Dining Hall
How has this project impacted how you eat?	Know the why of eating healthy
	Need to eat more vegetables
	Amount of carbohydrates/not all carbs are bad
Utilize labeling system in Dining Hall?	Helpful in making healthy choices easier
Something you learned?	Portion sizes/portion control
	Different types of carbohydrates at different times

DISCUSSION & CONCLUSION

- Using a visual learning system helps students understand and implement the healthy, fitness and performance plate system into their everyday lives at the dining hall
- 100% of participants passed the survey while 88% passed the plate score which assesses the knowledge and application of the plates to be a educational tool
- Students emphasized that learning about the plate system helped them understand why they should be easting healthy, that they need to consume more vegetables and how to portion control based off of activity level
- There was no statistical significance between graduate and undergraduate plate and survey scores which means the plate system can be understood by all grade levels
- In conclusion, the healthy, fitness and performance plate system is a valuable educational tool to help students base their meals around their health beliefs and activity levels

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