

Abstract

Collegiate football student-athletes face many nutritional hurdles. To gain muscle/weight, many of these athletes consume as much food as possible without receiving nutritional counseling from a qualified source. According to a previous study analyzing football student-athletes, a general energy deficit was observed. In this study, 27 participants received three nutrition education sessions over six weeks. 55 athletes in total were tested for pre and post diet quality, body composition, and wellness measurements. Diet quality was assessed by the National Institute of Cancer Automated Self-Administered 24-Hour Dietary Assessment (ASA-24). Body composition data were assessed using tetrapolar bioelectrical impedance analysis (BIA): SECA mBCA 515. Body composition measurements include height, weight, body fat percentage, muscle mass percentage, phase angle, and body water percentages. The analysis indicates variability in dietary quality indicating individualized guidelines should be recommended to student-athletes.

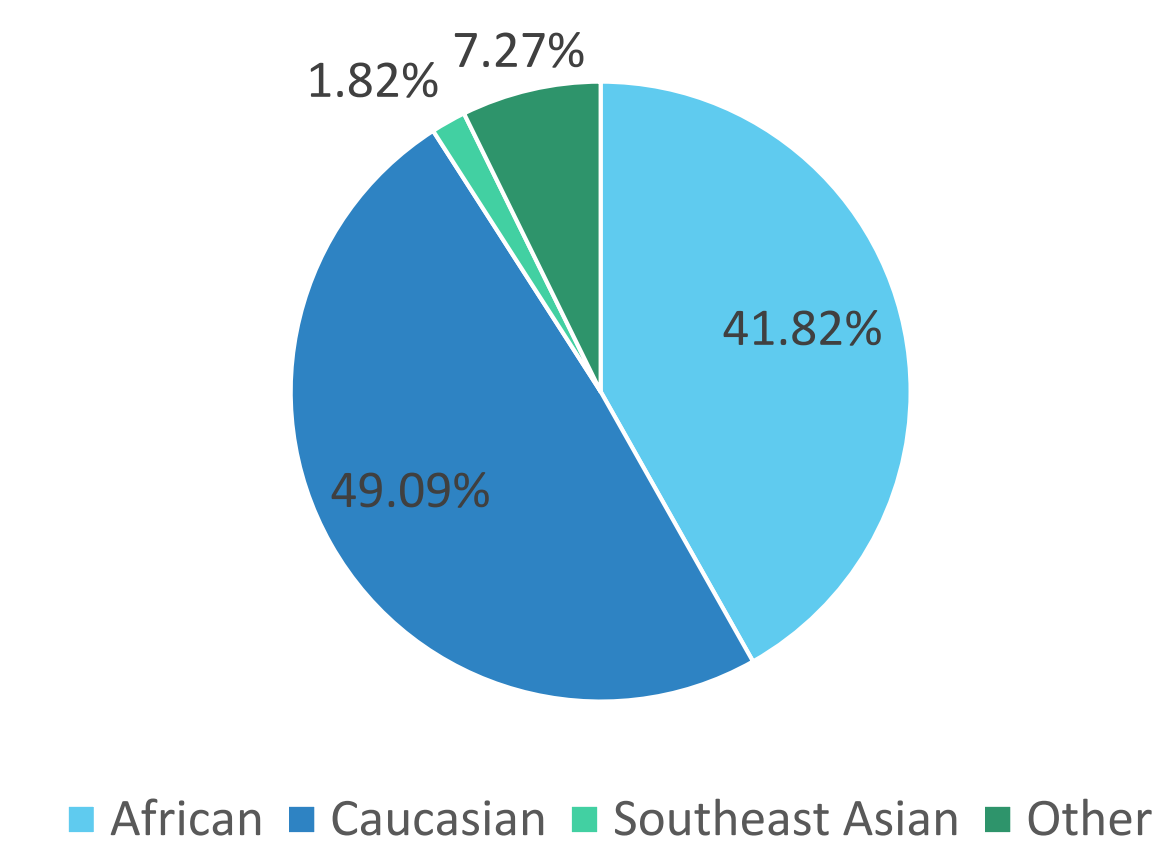
Introduction

According to a baseline assessment analyzing dietary patterns of Northern Arizona University student-athletes, a general energy deficit was observed with football players having the greatest deficit (Sutcliffe, Scheid, Carnot, Gormley, & Adams, 2019). Cole et al found similar results when evaluating the dietary practices of NCAA D(I) student-athletes concluding that the athletes energy intake was not significantly different when compared to a normal student population (Cole et al., 2005). Athletes have unique needs in terms of caloric intake compared with the general population. The primary concern with athletes is caloric intake because of the high energy demands of exercise in training and competition. Under-fueled athletes may experience decreased performance and negative long-term health consequences and outcomes.

Methods

Participants

- 55 male Division 1 college student-athletes
- Race - African (41.82%), Caucasian (49.09%), Southeast Asian (1.82%), Other (7.27%)
- Mean age 19.83 (SD 1.23)



Procedures

- Measurements assessed: Body composition, blood pressure, 24-hour diet recall, and food frequency taken pre and post
- Three 45-minute nutrition education sessions discussing macronutrients, supplementation, and hydration pertaining to sport
- Nutrition education sessions were provided every other week

Data Collection

- Body composition was evaluated using tetrapolar bioelectrical impedance analysis (BIA): SECA mBCA 515
- Food Frequency Questionnaire (FFQ)
- Automated Self-Administered 24-Hour Diet Recall (ASA-24)

Results

Pre-testing of collegiate Division 1 football student-athletes showed a higher caloric intake than expected (4,031.50 kcal). There were positive health changes such as a decrease in mean energy deficit, decrease in BMI, and increased intake of fiber, vegetables, and fruits. The data also reveals an increase in sugar intake and increased fat mass. Positive trends within the data indicate improved dietary quality although the data is not statistically significant. Desired body composition outcomes are variable depending upon personal goals, position, body type, and eating patterns.

Results - continued

Table 1: Changes in diet and body composition

	n	Pre	Post	t	Mean Difference	Confidence Interval
Mean Energy Deficit	55	646.00	239.42	T(54) = 1.752, p = 0.086	406.58	-58.811 871.961
Mean Total Caloric Intake (TCI) -kcal	53	4031.50	3923.77	0.383 52.000 p = 0.703	107.735	-456.900 672.371
Mean Sugar, (g)	54	133.217	143.864	-0.946 53.000 p = 0.349	-10.647	-33.227 11.933
Mean Fiber, total dietary (g)	54	29.594	32.517	-0.861 53.000 p = 0.393	-2.923	-9.733 3.887
Total Veggie Servings	55	2.449	3.629	-0.818 54.000 p = 0.417	-1.180	-4.071 1.712
Total Fruit Servings	55	.866	13.030	-1.023 54.000 p = 0.311	-12.164	-35.995 11.667
BMI kg/m ²	54	29.607	28.611	1.200 53.000 p = 0.236	0.996	-0.670 2.663
Absolute Fat Mass (lbs)	54	49.571	51.255	-0.979 53.000 p = 0.332	-1.684	-5.134 1.766

Discussion & Conclusions

The results reveal that certain aspects of diet quality increased following this nutrition education intervention. This may indicate more frequent nutrition education sessions over the same amount of time, or continued for longer periods of time may result in a more significant change in diet quality. Specific participants showed greater response to the nutrition intervention suggesting that individualized nutrition education could be beneficial. The decrease in mean energy deficit may be due to a lower BMI and not increased calorie intake. Low & inconsistent attendance by the participants may have impacted the outcomes.

References

- Cole, C., Salvaterra, G., Davis, J., Borja, M., Powell, L., Dubbs, E., & Bordi, P. Evaluation of dietary practices of National Collegiate Athletic Association Division I football players. *Journal of Strength and Conditioning Research*, vol. 19, p. 490-494. <https://www.ncbi.nlm.nih.gov/pubmed/16095395>
- Sutcliffe, J. T., Gardner, J. C., Gormley, J. M., Carnot M. J., & Adams, A. (2019). Assessing the dietary quality and health status among Division 1 College Athletes at moderate altitude. *The Sport Journal*, 20. <http://thesportjournal.org/article/assessing-the-dietary-quality-and-health-status-among-division-1-college-athletes-at-moderate-altitude/>

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