



Assessing Baseline Dietary Quality and Health Status Among Division 1 College Athletes

Sara Moore, B.S.

Jay Sutcliffe, PhD, RD, Julia Scheid, B.S., Jenny Gormley, Mary Jo Carnot, PhD



Abstract

A significant number of college athletes are known to consume inadequate diets, but expect to perform at their best. With nutrient deficiencies, studies show that the lack of vitamins and minerals reduce endurance, work performance, impair muscle function, and limit work capacity (Lukaski, 2004). Assessing dietary quality and overall health status provides opportunities for interventions to improve athletic performance and health status. This baseline assessment focused on food frequency, dietary quality, lipid profile, body composition, blood pressure, and phase angle in Division 1 college athletes. The assessment results provide valuable insight and direction for planning, implementing and evaluating a nutrition education plan.

Introduction

We examined the relationship between the dietary quality of athletes and their health status. Some college athlete's dietary patterns are shown to be inadequate, resulting in long-term health and performance effects. Assessing dietary quality is vital to investigate if further intervention is needed to improve athletic performance.

A disproportionate amount of emphasis is routinely focused on the macronutrient portions of the dietary intake, whereas the micronutrient portion is rarely emphasized. Essential vitamins and minerals are two types of micronutrients that are not produced in the body and must be consumed through food and beverage. Although macronutrients are essential for fuel sources, vitamins and minerals are crucial for energy production and utilization, as well as several other bodily processes. Athletes should be consuming a minimum of three servings of vegetables and two servings of fruit per day (Swiss Society for Nutrition, 2005).

Deficiency of nutrients can lead to decreased endurance, time to fatigue, work efficiency, work capacity and strength. Further effects include increased ventilation and heart rate, resulting in decreased performance (Lukaski, 2011). Guidance for micronutrient density intake for college athletes may lead to optimal health and performance.

Methodology

Participants:

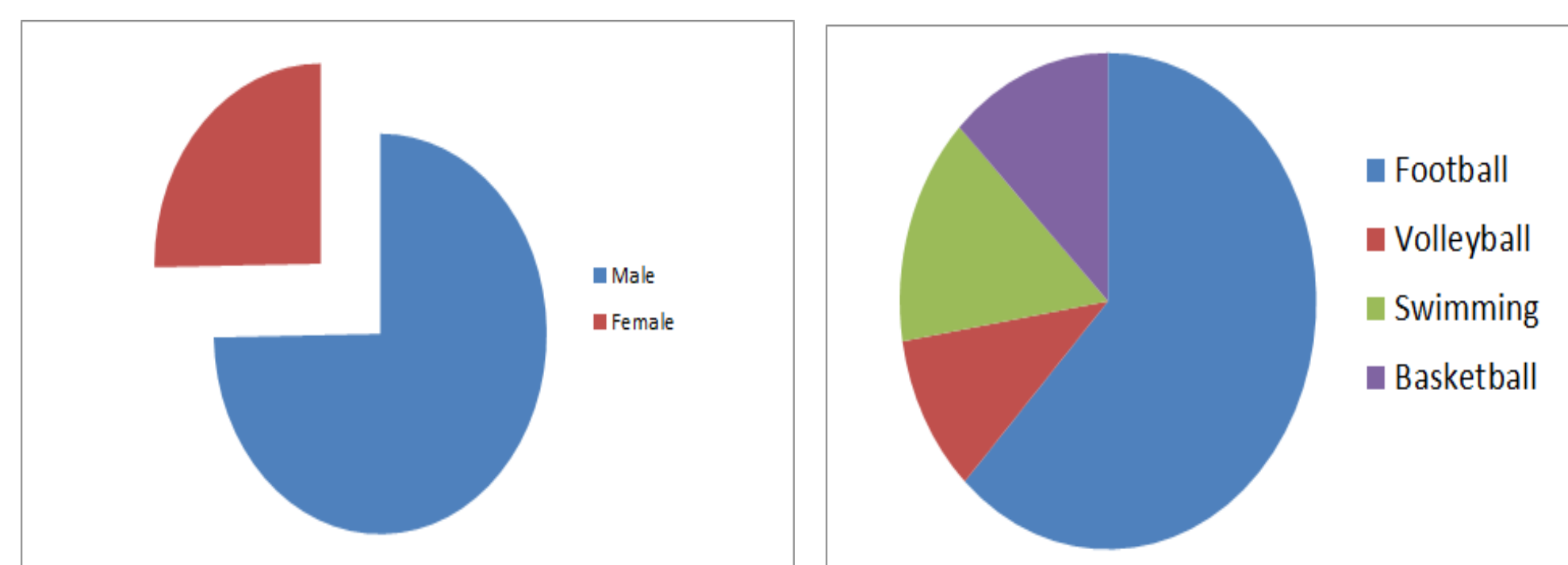
- 87 Division 1 college athletes,
- 75% male and 25% female, from the Southwest region of the U.S.
- Freshman to junior athletes from male football, female swimmers, female volleyball, and male basketball players

Procedures:

- Athletes reported to testing site in a fasting state.
- Blood draw, blood pressure, body composition, 24 hour dietary recall and food frequency stations
- Athletes were given an ANDI chart and advised to reach 250 points for breakfast, 500 points for lunch, and 500 points for dinner

Data Collection Tools/Measures:

- Cholestech for lipid-profile, cholesterol and glucose testing
- Sphygmomanometer for blood pressure
- SECA (mBCA 515) for body composition and phase angle
- Food frequency and the ANDI chart was used to assess dietary quality



Results

Figure 1: shows the average servings of fruits and vegetables combined per day for each group. Baseline food frequency data shows that all athletes have an average of 3.25 servings and a median of 3.2 servings of fruits and vegetables per day.

Figure 2: shows the baseline data for the average DANDI score per day. The population as a whole shows an average of 697 points per day with a median of 697 points.

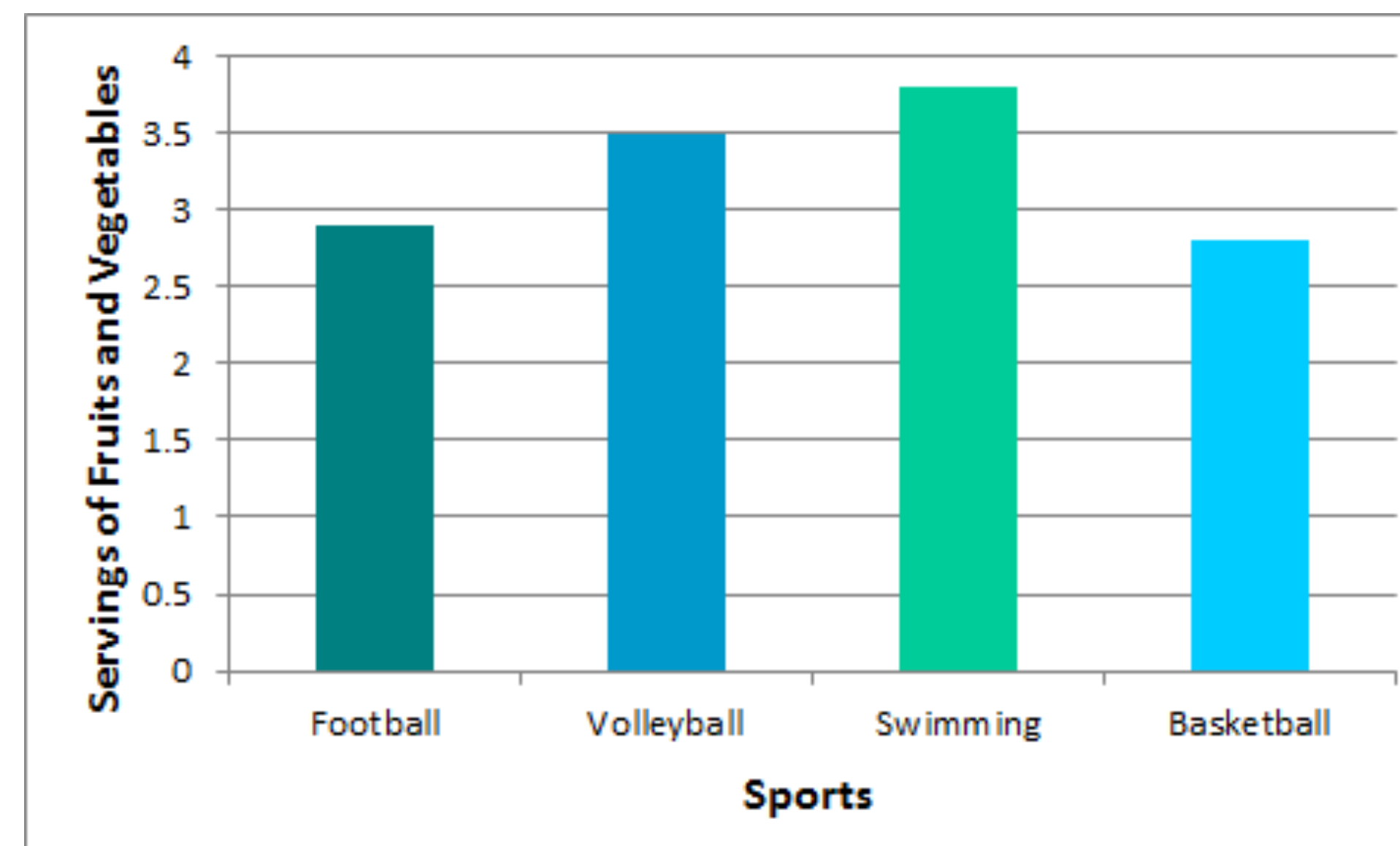


Figure 1

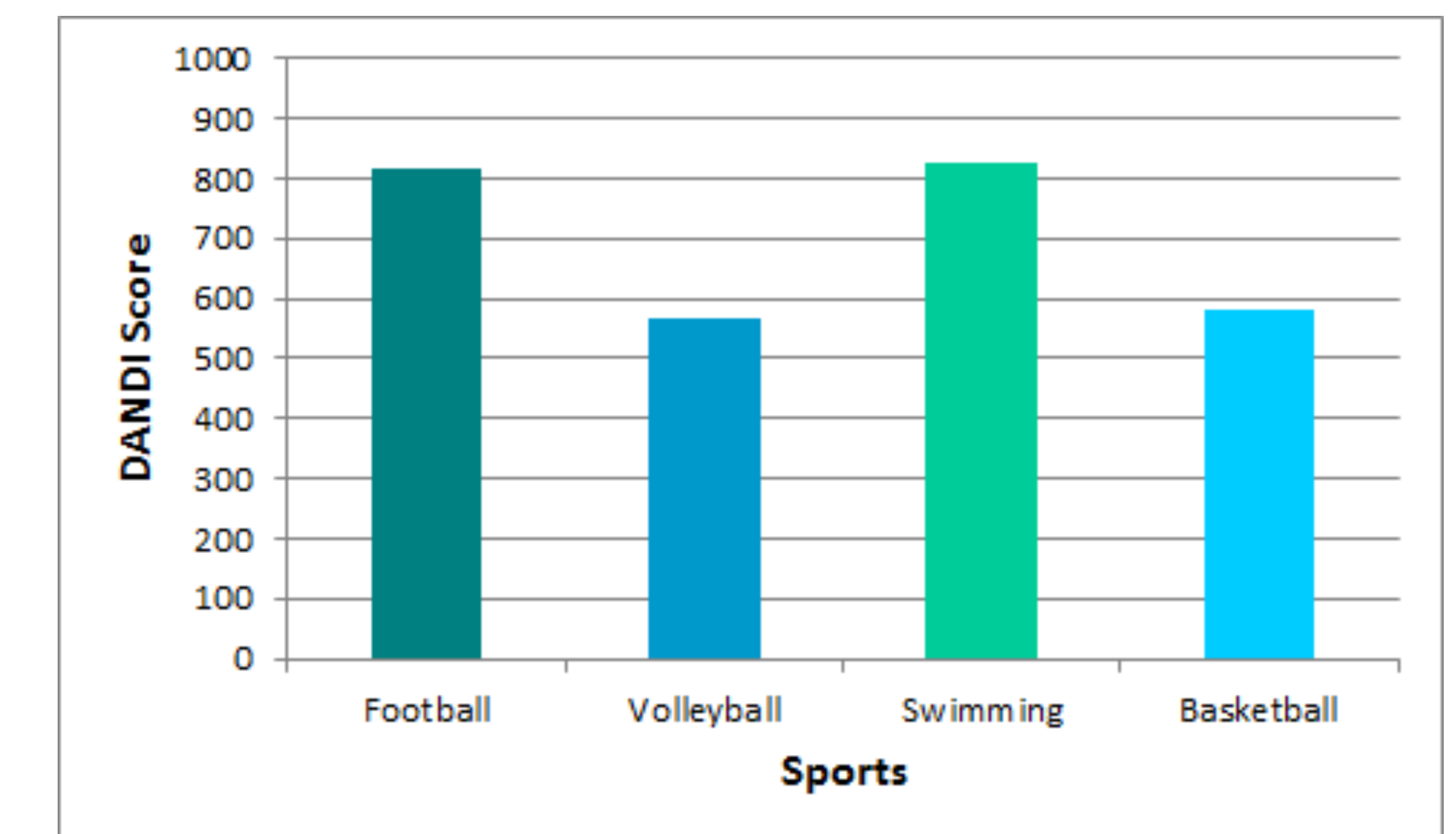


Figure 2

For the entire sample, there were no significant correlations between dietary quality (DANDI score) and BMI, Phase Angle or Fat Mass. Additionally there were no significant correlations between DANDI score and blood pressure (both SBP and DBP), heart rate, cholesterol measures (total, HDL, LDL, Non HDL, HDL ratio) triglycerides and glucose levels (all correlations had significance levels greater than .05).

Discussion/Conclusion

Initial baseline assessment data shows that athletes have a low consumption of nutrient dense foods (i.e.: fruits and vegetables). This demonstrates that this particular population could benefit from a nutrition education plan that emphasized techniques for improving the consumption of nutrient dense foods. Hence, potentially resulting in improved performance, optimum health, and creation of healthy habits for the future.

The association between dietary intake and the individual microbiome is being evaluated to determine its influence on health and athletic performance.

Lastly, it appears that for this population, BMI is an accurate measure for fat mass, but further investigation is needed.

References

- Fuhrman, J.H. (2017). ANDI Scores: Rating the Nutrient Density of Foods. Retrieved from: <https://www.drfuhrman.com/learn/library/articles/95/andi-food-scores-rating-the-nutrient-density-of-foods>
- Lukaski HC. (2004). Vitamin and mineral status: effects on physical performance. *Nutrition*, 20(7-8); 632-644.
- Lukaski H. (2011). NSCA Human Kinetics Select. Micronutrient Requirements for Athletes. NSCA's Guide to Sport and Exercise Nutrition. Retrieved from: <https://www.nasca.com/education/articles/micronutrient-requirements-for-athletes/>
- Swiss Society for Nutrition. (2005). Retrieved from: http://www.ssn.ch/wpcontent/uploads/2016/10/Lebensmittelpyramide_Sport_E1.2.pdf

This project is supported by funding from the Eric M. Lehrman 2015 Trust.