

# Perceived Nutrition Knowledge of High School Athletes and Non-Athletes

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## Introduction

- The goal of Healthy People 2020 was to, "increase the proportion of elementary, middle, and senior high schools that provide comprehensive school health education to prevent health problems in the following areas...unhealthy dietary patterns; and inadequate physical activity"<sup>1</sup>
- Government policies have been implemented in an effort to promote balanced meals and snacks and make them easily accessible to children and adolescents; likewise, smaller, localized programs aimed at increasing nutrition knowledge for both high school athletes and non athletes have emerged

## Purpose

The purpose of this review was to assess areas of concern related to nutrition education for high school students and previous methods of providing nutrition education to the high school athlete and non-athlete populations.

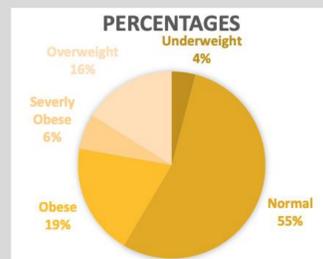
## Procedure

An extensive literature review was completed to obtain a thorough understanding for program duration, topics of importance, and program effectiveness. All programs that were reviewed were specific to high school students (grades 9-12) and/or high school (grades 9-12) athletes.

## Health Outcomes Among Adolescents

According to the National Health and Nutrition Examination Survey (NHANES) from 2017-2018, weight status of U.S. children and adolescents (2-19 years) included:

- 4.1% underweight
- 19.3% obese
- 6.1% severely obese
- 16.1% overweight<sup>2</sup>



According to the Centers for Disease Control and Prevention Youth Risk Behavior Surveillance System (YRBSS) 2019 report of high school students (grades 9-12) in North Dakota:

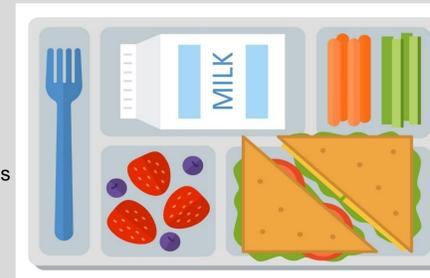
- 69.4% reported not eating breakfast seven days a week
- 20.5% reported not drinking milk
- 71.9% reported drinking pop at least once a week<sup>3</sup>

In regard to weight trends, North Dakota high school students are not statistically significant from the rest of the United States high school student population. However, North Dakota high schools students are more likely to not eat breakfast and drink pop at least once a week, compared to high school students in other states.

## Review of Literature

### Government Programs

The National School Lunch, School Breakfast, and Smart Snack Programs have guidelines schools are required to follow to help meet the Healthy People 2020 goals, including specific calorie, sodium, total fat, saturated fat, trans fat, and sugar contents of foods at both snack and meal-times. These guidelines are aligned with other governments programs and goals used to encourage healthy and mindful eating to reduce obesity rates in the United States.



### Recognized Need for Nutrition Education<sup>4</sup>

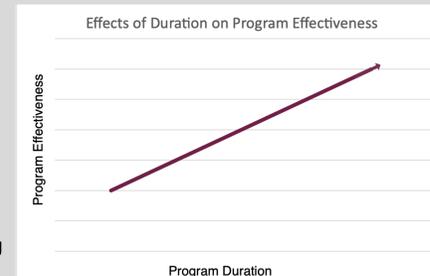
- To promote normal growth throughout adolescence, food-related professionals recommend developing programs which include: (1) messaging for healthy lifestyles; (2) skill development; (3) ethical food practices for sustainability, shopping local, and food security; and (4) food to farm programming
- Emphasis is on establishing lifelong eating practices early that will translate to adulthood

### Program Duration

- 1-time video lecture<sup>5</sup>
- 6-week program "Spice MyPlate"<sup>6</sup>
- 12-week program, meeting two times a week<sup>7</sup>
- 19-week program<sup>8</sup>
- 2-year program<sup>9</sup>
- 5-year program<sup>10</sup>

### Program Effectiveness

- Longer program durations were more effective than short term programs. Authors of the 6-week long program suggested a longer duration would have produced significant increases in nutrition knowledge from baseline<sup>6</sup>
- All other programs discussed had significant results in increasing nutrition knowledge

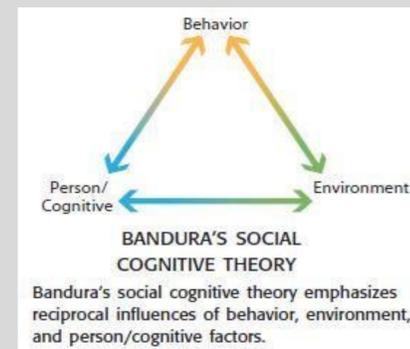
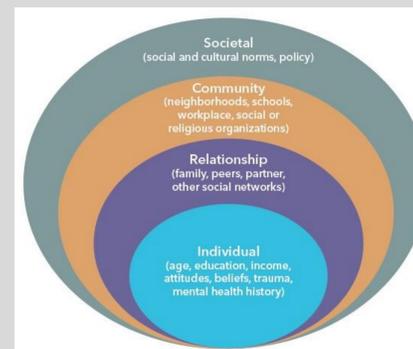


### Topics of Importance

- High school athletes had increased desire for life skills (grocery shopping, meal preparation, basic kitchen skills, food safety) and sustainability practices.<sup>9</sup> Additional topics for athletes included hydration, pre-exercise fueling, refueling, and fueling tips for traveling teams<sup>7</sup>
- Topics for non-athlete populations include recipe development, cooking and meal preparation, grocery store tours, food safety procedures<sup>6</sup>, sustainability, and farm to table<sup>8</sup>

### Learning Theories<sup>8</sup>

- Social Cognitive Theory
- Social Ecological Model
- Theory based learning produces more effective results when accounting for individual behaviors and factors coupled with environmental factors
- Learning styles: lecture, in-class activities, inquiry-based problem solving, team-building workshops, and experiential learning



## Conclusions

Many high school students engage in unhealthy food behaviors, which contributes to high rates of both underweight and obesity in recent years. Despite the efforts of governmental programs like the National School Lunch and Smart Snack programs, few improvements to the dietary patterns of adolescents have been achieved and maintained. Fortunately, research on nutrition education initiatives implemented with smaller groups of high school students have indicated favorable results. Researchers have observed sustainable changes in dietary habits as well as increased understanding of general nutrition topics following theory-based programming.

## References

- U.S. Department of Health and Human Services Educational and community-based programs. <https://www.healthypeople.gov/2020/topics-objectives/topic/educational-and-community-based-programs/objectives>. Published 2014. Accessed November 23, 2020.
  - Fryar CD, Carroll MD, Afful J. Prevalence of overweight, obesity, and severe obesity among children and adolescents aged 2–19 years: United States, 1963–1965 through 2017–2018. 2020. Accessed January 31, 2021, from <https://stacks.cdc.gov/view/cdc/58669>
  - Centers for Disease Control and Prevention. YRBSS. <https://www.cdc.gov/healthyyouth/data/yrbss/index.htm>. Published October 27, 2020. Accessed February 01, 2021.
  - Sadegholvad S, Yeatman, H, Parrish AM, Worsley A. What should be taught in secondary schools' nutrition and food systems education? views from prominent food-related professionals in Australia. *Nutrients*, 2017;9(11), 1207. <https://doi.org/10.3390/nu9111207>
  - Krick RL, Brown AF, Brown KN. Increased female athlete triad knowledge following a brief video educational intervention. *Journal of Nutrition Education and Behavior*. 2019;51(9), 1126–1129. <https://doi.org/10.1016/j.jneb.2019.05.600>
  - D'Adamo CR, McArdle PF, Balick L, Peisach E, Ferguson T, Diehl A, Bustad K, Bowden B, Pierce BA, Berman BM. Spice MyPlate: nutrition education focusing upon spices and herbs improved diet quality and attitudes among urban high school students. *American Journal of Health Promotion : AJHP*, 2016;30(5), 346–356. <https://doi.org/10.1177/0890117116646333>
  - Tarr K, Sandha P, Holben D. Does a once-weekly food education program improve sport nutrition knowledge of high school football players in rural, Appalachian Mississippi? *Journal of the Academy of Nutrition & Dietetics*, 2020;120, A78. <https://doi.org.cordproxy.mnpals.net/10.1016/j.jand.2020.06.066>
  - Bukhari A, Fredericks L, Wylie-Rosett J. Strategies to promote high school students' healthful food choices. *Journal of Nutrition Education and Behavior*, 2011;43(5), 414–418. <https://doi.org/10.1016/j.jneb.2011.01.008>
  - Patton-Lopez M M, Manore M M, Branscum A, Meng Y, Wong S S. Changes in sport nutrition knowledge, attitudes/beliefs and behaviors following a two-year sport nutrition education and life-skills intervention among high school soccer players. *Nutrients*, 2018;10(11), 1636. <https://doi.org/10.3390/nu10111636>
  - Hawkins M, Watts E, Belson SI, Snelling A. Design and implementation of a 5-year school-based nutrition education intervention. *Journal of Nutrition Education and Behavior*, 2020;52(4), 421–428. <https://doi.org/10.1016/j.jneb.2019.12.005>
- Graphics:  
National school lunch program. <https://www.education.pa.gov/Teachers%20-%20Administrators/Food-Nutrition/Programs/Pages/National-School-Lunch-Program.aspx> Accessed February 24, 2021  
Unknown. Social cognitive theory., from <http://jekscience.blogspot.com/2013/03/social-cognitive-theory.html> Accessed February 24, 2021

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