Eating Behaviors and Nutrition Challenges of Collegiate Athletes: The Role of the Athletic Trainer in a Performance Nutrition Program

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ABSTRACT

Purpose: To describe nutrition behaviors of collegiate athletes and explore practical ways that athletic trainers can collaborate with sports dietitians within a performance nutrition program.

Methods: An online survey was made available to all varsity athletes at a Division I university in 2015 and 2016.

Results: Response rates were 96% (n = 682) and 98% (n = 678) for 2015 and 2016, respectively. Athletic trainers were the most reported source of nutrition information in 2016. Lack of time was the primary barrier to eating for performance. For both years, 42% of athletes were trying to alter their weight. Athletes had difficulty following their preferred diet when travelling, with the frequency increasing from 22% to 38%.

Conclusions: Collegiate athletes face numerous nutrition challenges and receive nutrition information from a variety of sources. Collaboration between the athletic trainer and sports dietitian is paramount to helping athletes put evidence-based nutrition recommendations into practice.

The eating habits of athletes have come into focus during the past several decades due to sports science research that has elucidated the many ways nutrition can maximize physical performance, such as optimizing cognitive function, improving training adaptation, speeding recovery, and reducing the incidence of injury. College students fail to meet the current nutrition guidelines for a variety of reasons, including limited money, exposure to misinformation, insufficient access to healthy foods, inadequate cooking facilities, and inexperience in making personal food choices. Participation in intercollegiate athletics presents further nutritional challenges, such as increased nutrient needs, busy practice schedules, frequent travel, body composition pressures, and misleading marking of dietary supplements.

Certified athletic trainers have been described as “ideally positioned to affect dietary change” in young athletes; however, in early publications, mention of collaboration between certified athletic trainers and registered dietitians was notably absent. Since the 1990s, the field of sports dietetics has grown rapidly. Collegiate athletic departments around the country have established programs to provide student-athletes with nutrition education and performance-oriented foods. Registered dietitians with an expertise in sports nutrition (registered sports dietitians) typically direct such programs, but certified athletic trainers also play an integral role. Within a performance nutrition program, the certified athletic trainer can serve as observer, educator, referral source, and advocate for student-athlete health and well-being.

Several position statements from the National Athletic trainers’ Association recommend specific ways that certified athletic trainers can participate in a nutrition program. For example, certified athletic trainers help athletes maintain their sleep, hydration, and eating habits to maximize performance and safety. Certified athletic trainers are
expected to be knowledgeable about dietary supplements to educate their athletes regarding efficacy, safety, and legality.9 Additionally, certified athletic trainers are charged to be skilled observers so that athletes exhibiting high-risk behaviors such as inappropriate dieting or excessive exercise can receive timely treatment for disordered eating.10 These are just a few examples of how certified athletic trainers work with registered sports dietitians to help athletes meet established sports nutrition recommendations.1 More research is needed across all levels of athletic competition.

The purpose of the current study was to describe nutrition behaviors of student-athletes at one National Collegiate Athletic Association (NCAA) Division I institution, and to use the survey results to explore practical ways that certified athletic trainers can collaborate with registered sports dietitians within a performance nutrition program.

**METHODS**

An online survey was made available to all student-athletes at a single NCAA Division I institution at the beginning of the spring semester in both 2015 and 2016. The survey link was posted on a password-protected website with other annual sports medicine forms. The survey remained open for 8 weeks. The opening page of the survey stated that completion was anonymous and voluntary. Retrospective review of the data was approved by the university’s Health Sciences Institutional Review Board.

Survey questions were selected by registered sports dietitians and reviewed by a multidisciplinary team (certified athletic trainers, physician, strength and conditioning coach, athletics administrator, and student-athlete representative), with the goal of assessing current nutrition behaviors and engagement in the existing sports nutrition program, and to collect feedback for program improvement. The 2015 survey (Table A, available in the online version of this article) contained 34 questions, including several items adapted from published sports nutrition surveys,11,12 and an unpublished work by C. Reilly and R. Maughan (“The Development of a Reliable and Validated Questionnaire to Assess Sports Nutrition Knowledge,” Loughborough, UK, 2007). The 2016 survey (Table B, available in the online version of this article) contained 26 questions with 6 additional cascading questions, conditionally displayed based on athletes’ responses. Questions were removed and added (Tables C-D, respectively, available in the online version of this article) based on trends observed in the 2015 survey and changes made to the sports nutrition program in the preceding year.

Only completed surveys were included in the statistical analysis. For athletes who took the survey more than once in the same academic year (as assessed by the use of non-identifying number codes embedded within the survey), only the first set of responses was retained. The self-reported occurrences of selected nutrition behaviors are summarized with frequencies (percent). Unless otherwise specified, percentages reported are combined data from 2015 and 2016. If there was a substantial change to the survey question or significant difference in athlete responses over time, the specific year is indicated. Chi-square tests were used to evaluate differences in the sources of nutrition information and the use of dietary supplements among sexes and sports. To examine behavior change over time, a mixed effects model and generalized estimating equation were used to account for athletes who took the survey both years. Statistical significance was set at a P value of less than .05.

**RESULTS**

Survey response rates were 96% and 98% in 2015 (n = 682) and 2016 (n = 678), respectively. Respondents (52% male, 48% female) represented all 23 varsity teams at the university (Table 1). Two hundred thirty-six (35%) respondents completed the survey both years. The median completion time was 7 minutes.

**Sources of Nutrition Information**

The source of nutrition information cited most often was parents/family (55%) in 2015 and athletic trainer (56%) in 2016 (Figure 1). In 2015, male athletes were more likely than female athletes to use their coaches as a nutrition resource (P = .025). For both years, females were more apt to rely on friends/family or popular media compared to males (P ≤ .008). The number of athletes using individual appointments with a registered sports dietitian increased from 41% in 2015 to 47% in 2016.

**Reported Eating Behaviors**

High protein was the most common description that athletes selected for their usual diet (Table 2). Of the athletes who indicated that they were trying to gain weight, 79% were male and 28% played football. Conversely, of those who wanted to lose weight, 65% were female and 28% competed on the rowing teams. Fifteen percent of athletes reported eating fewer than three meals daily, of whom 45% were freshmen or redshirt freshmen. Lunch
was the most frequently skipped meal, typically due to lack of time or class at mealtime (Figure 2). The average number of meals eaten out per week was three for both years; the frequency of dining out did not significantly differ by the athletes’ year of eligibility. Twelve percent of athletes consumed caffeine on a daily basis. In 2016, the most common sources of caffeine were coffee, hot tea, and regular soda. Energy drinks were consumed by only 7% of athletes during the school year, with those individuals being primarily male underclassmen.

Nutrition Challenges for Athletes

The percentage of athletes who indicated that they monitored their hydration level (by observing urine color, taking before/after weights, or using physical symptoms such as thirst or headache) decreased from 93% in 2015 to 78% in 2016. A significant shift in the reported source of nutrition information occurred between 2015 and 2016. Resources that were considered athletic department staff; a significant difference compared to 2015, P < .05; c Percentages based on the total number of athletes who completed the question, n = 680 (2015) and n = 672 (2016).

Dietary Supplements

In 2015 and 2016, 70% and 65% of athletes, respectively, reported that they were currently using at least one

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**Figure 1.** Sources of nutrition information used by collegiate athletes. Athletes were encouraged to choose all that apply. A significant shift in the reported source of nutrition information occurred between 2015 and 2016. a Resources that were considered athletic department staff; b A significant difference compared to 2015, P < .05; c Percentages based on the total number of athletes who completed the question, n = 680 (2015) and n = 672 (2016).
supplement, with multivitamin, protein, and vitamin D indicated as the most commonly used supplements for both years (Table 4). For both years, males were more likely to use supplements than females ($P \leq .005$). In 2015, males were more likely to use protein/amino acids ($P < .001$) and creatine ($P < .001$), whereas females were more likely to use minerals such as iron ($P < .001$). Similar patterns between sexes were observed in 2016. There were expected trends in supplement use among certain sports. For example, in 2016, 45% of those taking calcium were on the cross-country or track teams. For both years, 52% of creatine users played football and 65% of cross-country runners were taking iron.

**Barriers to Eating for Performance**

The top three barriers to eating for performance in 2016 were lack of time (38%), class at mealtime (13%), and not enough money (13%). Only 7% of athletes said that they were happy with their current eating habits and did not see any need to improve their nutrition lifestyle. The five most common ways athletes felt that they could improve their nutrition were: (1) eating more variety (62%), (2) eating more fruits/vegetables (61%), (3) eating fewer sweets (49%), (4) cooking for themselves more often (48%), and (5) learning more about nutrition (31%). When asked what additional nutrition resources they would like in 2016, smartphone application (48%), cooking classes (38%), and written educational materials (33%) were the most requested.

**DISCUSSION**

Our 2-year survey illustrates the numerous sources of nutrition information used by collegiate athletes. Although registered sports dietitians were certainly viewed as an important resource, athletes also relied heavily on certified
athletic trainers, teammates/friends, and family. In line with previous research, common nutrition challenges exist for collegiate student-athletes, such as limited time, body weight pressures, and frequent travel. Despite the obstacles, 93% of athletes self-identified areas for nutrition improvement, suggesting they may be receptive to nutrition education. The number of participating athletes in our study was higher than any published survey of collegiate sports nutrition behaviors at a single institution. Repeating the survey a second year provided additional insight into what nutrition factors may be more constant (ie, lack of time) versus those that may fluctuate more from year to year (ie, sources of nutrition information).

**Sources of Nutrition Information**

In 2015, the top three sources of nutrition information were outside of the athletic department (parents/family, friends/teammates, and the Internet). Just 1 year later, the top resources shifted significantly to athletic department staff (certified athletic trainer, registered sports dietitian, and strength coach). In the year between the two surveys, the athletic administration created a stand-alone Department of Performance Nutrition, independent from the Departments of Sports Medicine and Strength and Conditioning, which could have increased visibility and use of existing resources. Additionally, a second full-time registered sports dietitian was added to the staff, improving access for both student-athletes and staff. Access to a registered sports dietitian has been associated with improved nutrition behaviors of collegiate athletes.

**Reported Eating Behaviors**

Historically, athletes have been encouraged to eat a high carbohydrate and moderate protein diet. On both surveys, more athletes described their usual diet as high protein rather than high carbohydrate. The reason for this disparity is multifactorial, but likely influenced by recent sports nutrition research and popular media promoting reduced

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**TABLE 3**

<table>
<thead>
<tr>
<th>Nutrition Challenges Encountered by Athletes While Traveling for Competition in 2016</th>
<th>n(^a)</th>
<th>Percent(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport food is expensive or unhealthy</td>
<td>142</td>
<td>56%</td>
</tr>
<tr>
<td>Restaurant options unhealthy or portion sizes too large</td>
<td>112</td>
<td>44%</td>
</tr>
<tr>
<td>I eat too much</td>
<td>85</td>
<td>34%</td>
</tr>
<tr>
<td>Unreliable meal times</td>
<td>83</td>
<td>33%</td>
</tr>
<tr>
<td>No healthy snacks available</td>
<td>77</td>
<td>30%</td>
</tr>
<tr>
<td>Difficult to find foods that meet my dietary restrictions</td>
<td>66</td>
<td>26%</td>
</tr>
<tr>
<td>Eat too many snacks</td>
<td>65</td>
<td>26%</td>
</tr>
<tr>
<td>I don’t have enough to eat</td>
<td>64</td>
<td>25%</td>
</tr>
<tr>
<td>Not enough money/per diem</td>
<td>51</td>
<td>20%</td>
</tr>
<tr>
<td>Dislike foods provided at catered team meals</td>
<td>47</td>
<td>19%</td>
</tr>
<tr>
<td>Dislike restaurants picked by coaches/staff</td>
<td>41</td>
<td>16%</td>
</tr>
</tbody>
</table>

\(^a\) represents the number of times a response was selected. Athletes were encouraged to ‘choose all that apply,’ so an individual may have selected multiple responses.

\(^b\) Percentages reflect proportion of the athletes who reported having challenges on the road (n = 253). The remaining 63% of athletes either reported no difficulty following their desired training/competition diet while traveling (n = 416) or did not respond to the question (n = 9).

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**TABLE 4**

<table>
<thead>
<tr>
<th>Dietary Supplement Use Reported at the Time of 2015 and 2016 Surveys</th>
<th>2015(^b)</th>
<th>2016(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>30% (210)</td>
<td>35% (233)</td>
</tr>
<tr>
<td>Multivitamin</td>
<td>31% (219)</td>
<td>31% (207)</td>
</tr>
<tr>
<td>Protein powder/shakes/bars</td>
<td>31% (219)</td>
<td>28% (190)</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>28% (195)</td>
<td>27% (182)</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>16% (111)</td>
<td>18% (120)</td>
</tr>
<tr>
<td>Iron</td>
<td>10% (72)</td>
<td>11% (75)</td>
</tr>
<tr>
<td>Calcium</td>
<td>3% (20)</td>
<td>10% (65)</td>
</tr>
<tr>
<td>Fish oil</td>
<td>9% (65)</td>
<td>8% (54)</td>
</tr>
<tr>
<td>B-complex vitamins</td>
<td>8% (55)</td>
<td>8% (51)</td>
</tr>
<tr>
<td>Probiotic</td>
<td>4% (31)</td>
<td>6% (40)</td>
</tr>
<tr>
<td>Creatine</td>
<td>6% (45)</td>
<td>6% (37)</td>
</tr>
<tr>
<td>Branch chain amino acids</td>
<td>4% (26)</td>
<td>4% (30)</td>
</tr>
<tr>
<td>Other</td>
<td>5% (36)</td>
<td>4% (25)</td>
</tr>
<tr>
<td>Glutamine</td>
<td>1% (8)</td>
<td>2% (11)</td>
</tr>
<tr>
<td>Glucosamine</td>
<td>1% (5)</td>
<td>&lt; 1% (2)</td>
</tr>
<tr>
<td>Leucine</td>
<td>0% (0)</td>
<td>&lt; 1% (1)</td>
</tr>
</tbody>
</table>

\(^a\) Athletes were encouraged to choose all that apply.

\(^b\) Percent (n), with percentages based on the total number of athletes who completed the question (n = 697 [2015] and 671 [2016]).
carbohydrate intake. Similar trends have been observed in previous studies; in 2007, 44% of 165 athletes reported that they had intentionally restricted dietary carbohydr-
ates. In their daily interaction with athletes, certified athletic trainers may field questions about the latest sports nutrition findings or fad diets. Certified athletic trainers can help athletes objectively evaluate diet-related claims and/or refer them to a registered sports dietitian. If certified athletic trainers observe that a suboptimal diet practice is becoming commonplace on their team, they may request that the registered sports dietitian develop written material or give a team presentation on the topic.

The high number of athletes seeking to change their body weight in our study (42%) and the sex differences observed in those weight goals were similar to those previously documented in Division I sports. In one study of 45 female athletes, 33% of respondents expressed a desire to lose weight. In another study of 345 athletes, 62% of females across all sports desired to lose at least 5 pounds. Weight gain was desired by 58% of males in that study, particularly among football, basketball, and baseball players. Recently, Adams et al. sought to quantify the difference between athletes’ actual weight and their ideal weight. They found that the average desired amount of weight loss from an athlete’s current weight was 6.8 ± 8.8 lb for females and 1.3 ± 12.3 lb for males. These data underscore the importance of credible nutrition resources as athletes attempt to identify and maintain their preferred body weight and composition for athletic competition. Certified athletic trainers can facilitate body composition testing (when available and appropriate), monitor weight loss or gain, engage athletes in conversations about their weight goals/dietary strategies, and alert the team physician, sports psychologist, and registered sports dietitian if an athlete needs further evaluation or education to properly attain their goals.

Athletes in our study reported a lower frequency of meal skipping and eating out compared to previous studies. The percentage of athletes eating fewer than three meals per day (15%) was only one-half of that previously reported by female collegiate athletes (29%). The average number of meals eaten out was one to two fewer per week than that reported in 2001 (3.4 vs 5.3 meals/week for males, 2.4 vs 3.4 meals/week for females, respectively). In April 2014, the NCAA lifted regulations on the number of meals that could be provided to student-athletes. Easier access to low- or no-cost meals is likely responsible for some of the improvement in mealtime behaviors. Lunch was the most often missed meal both years, which is not surprising because class conflicts are common and our university provides free breakfast to all athletes and additional evening meals to 25% of the teams.

### Nutrition Challenges for Athletes

The percentage of athletes consuming a meal or snack following a workout in our study (94%) was higher than that reported by Hull et al. in 2016 (76%). Certified athletic trainers can encourage athletes to accept food provided by the athletic department and/or pack their own meals and snacks when scheduling limits food access during key fueling windows (ie, before and after workouts).

After interviewing elite athletes, coaches, and registered sports dietitians, Heaney et al. concluded that traveling leads to an “insecure food environment,” specifically citing variability in catered meals, unpredictable meal times, and food safety concerns. Athletes in our study echoed those concerns, particularly related to lack of control over available food options and eating schedules. They also indicated that they had difficulty exercising self-control when presented with larger portions and/or unhealthy options. On the 2015 survey, 22% of athletes reported nutrition challenges on the road, which coincides exactly with that reported in a different sample of female collegiate athletes in 2013. However, in our subsequent 2016 survey, the percentage nearly doubled to 38%. In 2016, the travel question was changed from a free-text format to a multiple-choice format, which may have encouraged more affirmative answers. Other contributing causes likely included additional sports nutrition education and expanded fueling stations in the training facilities at the university. Athletes who are more aware of the importance of nutrition and accustomed to a wide selection of performance-oriented foods at home may notice the nutrition challenges on the road more acutely.

Certified athletic trainer involvement is key to optimizing nutrition while traveling. By encouraging athletes to pack their own snacks, certified athletic trainers can foster planning skills and ownership. If athletes have special dietary needs, the certified athletic trainer can communicate with the coaches or operations staff who choose eating venues while traveling. Additionally, certified athletic trainers may work with the registered sports dietitian(s) to pack a team supply of snacks to enhance performance and recovery if the budget allows.

### Dietary Supplements

Supplement use of 65% to 70% was higher than the rate of 44% recently reported by Hull et al., but lower than
the rates of 88% and 89% reported by Burns et al.\textsuperscript{20} and Froiland et al.,\textsuperscript{21} respectively. The wording and structure of supplement questions on surveys likely affect the rates of reported supplement use. For example, Hull et al.\textsuperscript{13} used an open-ended question style to query supplement use. In our study, calcium was mistakenly omitted on the 2015 survey, but athletes could still include their responses in the “other” box. When calcium was added as a multiple-choice option in 2016, the reported use more than tripled. In another study, Burns et al.\textsuperscript{20} employed a yes/no question style; however, it is unclear if they asked about the timeframe of supplement use (ever vs past year vs currently). Because some supplements (eg, creatine) are most effective when taken on a cycled schedule, asking about “current” supplements may miss some athletes’ regularly used products.

Regardless of the exact frequency, it is evident that most collegiate athletes have used or are using dietary supplements. As previously stated, athletes frequently seek nutrition information from their certified athletic trainer.\textsuperscript{20} Because injudicious supplement use poses a significant risk to athlete health and eligibility, the National Athletic Trainers’ Association published a 2013 position statement\textsuperscript{9} to help certified athletic trainers promote a “food first” philosophy and know where to locate reputable resources for evaluating dietary supplements. The first evidenced-based recommendation was for certified athletic trainers to collaborate with their registered sports dietitian. The certified athletic trainer and sports registered dietitian should be in regular communication regarding supplements that athletes have brought in for evaluation.

Limitations

The primary limitation of our study was that all data were self-reported. Although anonymous, student-athletes did specify their sport, sex, and year, and may have felt reluctant to answer all questions truthfully, especially because team reports were provided to coaches. It cannot be determined whether favorable changes observed between 2015 and 2016 reflected actual behavior change or simply increased awareness brought about by repeating the nutrition survey. For practical reasons, our survey was administered at the beginning of the spring semester. The month-long winter break may have affected athletes’ abilities to recall their normal habits during the academic year. Additionally, teams were at different stages of their seasons at the time of survey administration, which may have influenced eating habits, including cyclic or seasonal use of dietary supplements. The survey did not explore the reasons why athletes took their dietary supplements or who had recommended
them. Finally, our results may not be generalizable to all collegiate athletes because the nutrition education and foods provided are unique to this institution.

**IMPLICATIONS FOR CLINICAL PRACTICE**

Because certified athletic trainers typically have the most consistent contact with athletes and are viewed as a credible nutrition resource, they play a key part in motivating athletes to improve their nutrition for optimal performance. Figure 3 highlights Practice Pearls for certified athletic trainers wanting to get more involved with sports nutrition. We found that surveying our athletes’ eating behaviors provided a powerful tool for raising awareness in the athletic department about the importance of nutrition. We compiled results into team-specific reports for coaches, discussed findings in sports medicine meetings, incorporated the data into team nutrition educations, and used the feedback to improve the performance nutrition program. Registered sports dietitians and certified athletic trainers who are passionate about nutrition are encouraged to collaborate on similar projects to facilitate conversations about optimizing student-athlete performance, health, and well-being.

**REFERENCES**

7. Vinci DM. Effective nutrition support programs for college athletes.

**Table A**  
**Performance Nutrition Survey 2015**


You've probably noticed the Performance Nutrition Program is bigger and better than ever. Here's your chance to tell us how we could better fuel you. Completion of this 5 minute survey is **confidential and voluntary**

### 1. Sport:
- Men’s Basketball
- Men’s Cross Country
- Football
- Men’s Golf
- Men’s Hockey
- Men’s Rowing
- Men’s Soccer
- Men’s Swimming & Diving
- Men’s Tennis
- Men’s Track & Field
- Wrestling
- Women’s Basketball
- Women’s Cross Country
- Women’s Golf
- Women’s Hockey
- Women’s Rowing
- Women’s Lightweight Rowing
- Women’s Soccer
- Softball
- Women’s Swimming & Diving
- Women’s Tennis
- Women’s Track & Field
- Volleyball

### 2. Year of eligibility:
- Freshman
- Redshirt Freshman
- Sophomore
- Redshirt Sophomore
- Junior
- Redshirt Junior
- Senior
- Redshirt Senior

### 3. Which of the following describe your usual diet? (choose all that apply)
- I eat low carb
- I eat high carb
- I eat high fiber
- I eat gluten-free
- I avoid sweets/sugar
- I am lactose intolerant
- I eat high protein
- I avoid red meat
- I avoid alcohol
- I avoid fast food
- I avoid fats/oils
- I am trying to gain weight
- I am trying to lose weight
- I am vegetarian
- I am vegan
- I have food allergies/intolerances - please specify
- Other - please specify

### 4. How many MEALS do you typically eat per day?
- 0 meals
- 1 meal
- 2 meals
- 3 meals
- 4+ meals

### 5. If you skip a meal, which one are you most likely to miss?
- Breakfast
- Lunch
- Dinner
- I do not skip meals

### 6. Why might you skip a meal? (choose all that apply)
- Food not available
- Lack of time
- Not enough money
- Not hungry
- Practice is at mealtimes
- To manage my weight
- Too tired
- Other ____________________
- I do not skip meals

### 7. In an average WEEK during the school year, how often do you eat out? (including carry-out)
- 0 meals
- 1-2 meals
- 3-4 meals
- 5-6 meals
- 7-8 meals
- 9-10 meals
- 10+ meals

### 8. What are the 2 most common places you eat out or get carry-out? (this includes restaurants, fast food, coffee shops, gas stations, etc)
- 1) _______
- 2) _______

### 9. During the SCHOOL YEAR, how often do you buy food at the Bistro?
- Never
- Once a month or less
- Every couple weeks
- 1-3 times per week
- 4-7 times per week
- 7+ times per week

### 10. During the SCHOOL YEAR, how often do you eat the breakfast provided by Athletics?
- Never
- Once a month or less
- Every couple weeks
- 1-3 times per week
- 4-5 times per week

### 11. If you could choose your location for the Athletics breakfast, where would you prefer to eat?
- Camp Randall
- Kohl Center
- Other ____________________

### 12. During the competitive season, how many days per week might you consume alcohol? (your answer is confidential & will not be shared with coaches)
- 0 days
- 1-2 days
- 3-4 days
- 5-6 days
- 7 days

### 13. During the school year, how many days per week do you drink caffeinated beverages? (coffee, espresso, caffeinated tea, soda, red bull, etc)
- 0 days
- 1-2 days
- 3-4 days
- 5-6 days
- 7 days

### 14. On days you consume caffeinated beverages, approximately how many 8 ounce cups do you drink? (for reference, a bottled water contains 2.5 cups in each bottle)
- 1 cup
- 2 cups
- 3 cups
- 4 cups
- 5+ cups
- N/A

### 15. If you could improve your nutrition, what would you do? (choose all that apply)
- Eat more often
- Eat less often
- Eat more calories
- Eat fewer calories
- Eat more variety of foods
- Eat out less
- Cook for myself
- Learn more about nutrition
- Eat more fruits and vegetables
- Other ____________________
- Nothing, I’m happy with my current nutrition
16. Where do you get your nutrition information? (choose all that apply)
   - Athletic trainer
   - Coach
   - Doctor
   - Friends/teammates
   - Internet
   - Magazines
   - Parents/family
   - Popular nutrition books
   - Social media (Facebook/Twitter/etc)
   - Sports nutritionist
   - Strength coach
   - Team meal manager
   - Television
   - Other ____________________

17. Did you attend nutrition night at the Life Skills Academy? (class for incoming athletes every fall semester)
   - Yes
   - No

18. How many team cooking seminars have you attended?
   - 0 seminars
   - 1 seminar
   - 2 seminars
   - 3 seminars
   - 4 seminars
   - 5 seminars

19. Would you be interested in an advanced cooking class? (attendance would be optional)
   - Gluten free cooking
   - Local/sustainable cooking
   - Organic cooking
   - Vegan cooking
   - Vegetarian cooking
   - Other ____________________
   - No, I am not interested in additional cooking classes

20. Has a sports nutritionist given a presentation to your team (that you attended)
   - Yes
   - No

21. How many individual appointments have you had with a sports nutritionist?
   - 0 appointments
   - 1 appointment
   - 2 appointments
   - 3+ appointments

22. Do you have difficulty following your training/competition diet when traveling?
   - Yes (if yes, please briefly explain below) ____________________
   - No

23. In the 2-4 hours BEFORE a practice or competition, what kind of foods do you generally consume? (choose all that apply)
   - High carbohydrate (bread, pasta, granola bars, cereal, fruit)
   - High fat (nuts, cheese, red meat)
   - High protein (meat, eggs, dairy)
   - Little to nothing
   - Other ____________________

24. AFTER a practice or competition, what kind of foods do you generally consume? (choose all that apply)
   - High carbohydrate (bread, pasta, granola bars)
   - High fat (nuts, cheese, red meat)
   - High protein (meat, eggs, dairy)
   - Little to nothing
   - Other ____________________

25. AFTER a practice or competition, typically how long is it before you eat a snack or meal?
   - 0-30 minutes
   - 30-60 minutes
   - 60-90 minutes
   - 90+ minutes

26. How do you check your hydration level? (choose all that apply)
   - Physical symptoms (headache, fatigue, dry mouth, etc)
   - Pre/post practice weights
   - Urine color
   - Other ____________________
   - I don’t regularly monitor my hydration level

27. How many 8 ounce cups of fluid do you drink BEFORE a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   - None
   - 1-2 cups
   - 3-4 cups
   - 5+ cups

28. What fluids do you drink BEFORE practice?

29. How many 8 ounce cups of fluid do you drink DURING a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   - None
   - 1-2 cups
   - 3-4 cups
   - 5+ cups

30. What fluids do you drink DURING practice?

31. How many 8 ounce cups of fluid do you drink AFTER a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   - None
   - 1-2 cups
   - 3-4 cups
   - 5+ cups

32. What fluids do you drink AFTER practice?

33. What supplements are you currently taking? (choose all that apply)
   - B-complex vitamins
   - Branch chain amino acids (BCAAs)
   - Creatine
   - Fish oil
   - Glucosamine
   - Glutamine
   - Iron
   - Leucine
   - Multivitamin
   - Protein powder/shakes/bars
   - Probiotic
   - Vitamin C
   - Vitamin D
   - Other ____________________
   - Not currently taking any supplement

34. How could the Performance Nutrition Program make it easier for you to get sports nutrition information and use it in your everyday life
The Performance Nutrition Program exists to provide you with food and nutrition information in order to improve your performance and overall health. Here’s your chance to tell us how we could better fuel you. Completion of this 5 minute survey is confidential and voluntary.

1. Sport:
   - Men's Basketball
   - Men's Cross Country
   - Football
   - Men's Golf
   - Men's Hockey
   - Men's Rowing
   - Men's Soccer
   - Men's Swimming & Diving
   - Men's Tennis
   - Men's Track & Field
   - Wrestling
   - Women's Basketball
   - Women's Cross Country
   - Women's Golf
   - Women's Hockey
   - Women's Rowing
   - Women's Lightweight Rowing
   - Women's Soccer
   - Softball
   - Women's Swimming & Diving
   - Women's Tennis
   - Women's Track & Field
   - Volleyball

2. Year of eligibility:
   - Freshman
   - Redshirt Freshman
   - Sophomore
   - Redshirt Sophomore
   - Junior
   - Redshirt Junior
   - Senior
   - Redshirt Senior

3. Does nutrition really matter? Indicate how much impact you think your food choices have on your academic & athletic performance:
   - Academic Performance _____ (scale: 0-10)
   - Athletic Performance _____ (scale: 0-10)

4. Which of the following describe your usual diet? (choose all that apply)
   - I avoid fats/oils
   - I am trying to gain weight
   - I am trying to lose weight
   - I am vegetarian
   - I am vegan
   - I have food allergies/intolerances - please specify _______
   - Other - please specify _______
   - None of the above

5. How many MEALS do you typically eat per day?
   - 0 meals
   - 1 meals
   - 2 meals
   - 3 meals
   - 4+ meals

6. How many SNACKS do you typically eat per day?
   - 0 snacks
   - 1 snack
   - 2 snacks
   - 3 snacks
   - 4+ snacks

7A. If you skip a meal, which one are you most likely to miss?
   - Breakfast
   - Lunch
   - Dinner
   - I do not skip meals

7B. Why might you skip a meal? (choose all that apply)
   - Class is at mealtime
   - Food not available
   - Lack of time
   - Not enough money
   - Not hungry
   - Sleeping in
   - Practice is at mealtime
   - To manage my weight
   - Too tired to purchase or prepare food
   - Other ___________________
   - I do not skip meals

8. During the SCHOOL YEAR, how often do you eat the breakfast provided by Athletics?
   - Never
   - Once a month or less
   - Every couple weeks
   - 1-3 times per week
   - 4-5 times per week

9A. During the SCHOOL YEAR, how often do you buy food at the Bistro?
   - Never
   - Once a month or less
   - Every couple weeks
   - 1-3 times per week
   - 4-7 times per week
   - 7+ times per week

9B. What is the #1 reason why you don’t eat at the Bistro more often?
   - Wait time is too long
   - Prices are too high
   - Location is not convenient
   - The food doesn’t meet my dietary restrictions
   - The food doesn’t meet my taste preferences
   - Portion sizes are too small
   - Portion sizes are too large
   - Other ___________________

10. In an average WEEK during the school year, how often do you eat out? (NOT counting dining halls, Bistro or team meals)
   - 0 meals
   - 1-2 meals
   - 3-4 meals
   - 5-6 meals
   - 7-8 meals
   - 9-10 meals
   - 10+ meals

11. What are the 2 most common places you eat out? (this includes restaurants, fast food, coffee shops, gas stations, food carts, etc)
   - 1) _______
   - 2) _______

12A. During the school year, do you drink any of the following caffeinated beverages? (choose all that apply)
   - Coffee
   - Espresso
   - Tea (using tea bags)
   - Tea (in bottle or can)
   - Regular soda
   - Diet soda
   - Energy drink (Monster, Red Bull, etc)
   - Other ___________________
   - None of the above
### Table B (cont’d)

**Performance Nutrition Survey 2016**

12B. How often do you drink the caffeinated beverages?

<table>
<thead>
<tr>
<th></th>
<th>Once a month or less</th>
<th>Every couple weeks</th>
<th>1-3 days per week</th>
<th>4-6 days per week</th>
<th>Once a day</th>
<th>Multiple times per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<td>Tea (using tea bags)</td>
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<td>Energy drink (Monster, Red Bull, etc)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

13. In the 2-4 hours BEFORE a practice or competition, what kind of foods do you generally consume? (choose all that apply)
- Bread
- Rice
- Cereal
- Pasta
- Starchy vegetables (potatoes, corn, squash, etc)
- Fruit
- Granola bars
- Nuts/Seeds
- Milk
- Yogurt
- Cheese
- Meat
- Eggs
- Other ____________________

14. AFTER a practice or competition, what kind of foods do you generally consume? (choose all that apply)
- Bread
- Rice
- Cereal
- Pasta
- Starchy vegetables (potatoes, corn, squash, etc)
- Fruit
- Granola bars
- Nuts/Seeds
- Milk
- Yogurt
- Cheese
- Meat
- Eggs
- Other ____________________

15. AFTER a practice or competition, typically how long is it before you eat a snack or meal?
- 0-30 minutes
- 30-60 minutes
- 60-90 minutes
- 90+ minutes

16. How often do you utilize one of the fueling stations?
- Never
- Once a month or less
- Every couple weeks
- 1-3 days per week
- 4-5 days per week
- 6-7 days per week
- Multiple times every day

17. Are there any foods that are not currently offered at the fueling stations that you would want?

18A. Do you monitor your hydration level?
- Yes
- No

18B. How do you check your hydration level? (choose all that apply)
- Physical symptoms (headache, fatigue, dry mouth, etc)
- Pre/post practice weights
- Urine color
- Other ____________________

19A. Do you have difficulty following your desired training/competition diet when traveling?
- Yes
- No

19B. What nutrition challenges do you have when traveling? (choose all that apply)
- I eat too much
- I don’t have enough to eat
- Dislike foods provided at catered team meals
- Dislike restaurants picked by coaches/staff
- Restaurant options unhealthy or portion sizes too large
- Not enough money/per diem
- Unreliable meal times
- No healthy snacks available
- Eat too many snacks
- Difficult to find foods that meet my dietary restrictions
- Airport food is expensive or unhealthy
- Other ____________________

20. What supplements are you currently taking? (choose all that apply)
- B-complex vitamins
- Branch chain amino acids (BCAAs)
- Calcium
- Creatine
- Fish oil
- Glucosamine
- Glutamine
- Iron
- Leucine
- Multivitamin
- Protein powder/shakes/bars
- Probiotic
- Vitamin C
- Vitamin D
- Other ____________________
- Not currently taking any supplements
### Table B (cont’d)

**Performance Nutrition Survey 2016**

**21. Where do you get your nutrition information? (choose all that apply)**  
- Athletic trainer  
- Coach  
- Doctor  
- Friends/teammates  
- Internet  
- Magazines  
- Academic classes  
- Popular nutrition books  
- Social media (Facebook/Twitter/etc)  
- Sports nutritionist  
- Strength coach  
- Team meal manager  
- Television  
- Other ____________________

**22. During your career as a college athlete, how many individual appointments have you had with a sports nutritionist?**  
- 0 appointments  
- 1 appointment  
- 2 appointments  
- 3+ appointments

**23. During the school year, what is your biggest hurdle to eating for performance?**  
- Class is at mealtime  
- Healthy food not available at locations I currently eat  
- Lack of time  
- Not enough money  
- Practice is at mealtime  
- Too tired to purchase or prepare food  
- Other ____________________  
- I have no hurdles to eating for performance

**24A. Do you feel that you could improve anything in regards to your nutrition lifestyle?**  
- Yes  
- No

**24B. If you could improve your nutrition, what would you do? (choose all that apply)**  
- Eat more often  
- Eat less often  
- Eat more calories  
- Eat fewer calories  
- Eat more variety of foods  
- Eat out less  
- Cook for myself  
- Learn more about nutrition  
- Eat more fruits and vegetables  
- Eat fewer sweets  
- Other ____________________

**25. Which of the following would you like to see offered by the Performance Nutrition Department? (choose all that apply)**  
- Paper handouts, brochures, manuals, etc  
- Podcasts  
- Phone app  
- Email listserv  
- More social media options  
- Improved website  
- Higher level cooking classes  
- Other ____________________  
- Not interested in additional nutrition information

**26. What other comments or suggestions do you have for the Performance Nutrition Program?**
Table C
Questions Excluded from 2016 Performance Nutrition Survey

8. What are the 2 most common places you eat out or get carry-out? (this includes restaurants, fast food, coffee shops, gas stations, etc)
   o 1) ______
   o 2) ______

11. If you could choose your location for the Athletics breakfast, where would you prefer to eat?
   o Camp Randall
   o Kohl Center
   o Other _______________

12. During the competitive season, how many days per week might you consume alcohol? (your answer is confidential & will not be shared with coaches)
   o 0 days
   o 1-2 days
   o 3-4 days
   o 5-6 days
   o 7 days

13. During the school year, how many days per week do you drink caffeinated beverages? (coffee, espresso, caffeinated tea, soda, red bull, etc)
   o 0 days
   o 1-2 days
   o 3-4 days
   o 5-6 days
   o 7 days

14. On days you consume caffeinated beverages, approximately how many 8 ounce cups do you drink? (for reference, a bottled water contains 2.5 cups in each bottle)
   o 1 cup
   o 2 cups
   o 3 cups
   o 4 cups
   o 5+ cups
   o N/A

17. Did you attend nutrition night at the Life Skills Academy? (class for incoming athletes every fall semester)
   o Yes
   o No

18. How many team cooking seminars have you attended?
   o 0 seminars
   o 1 seminar
   o 2 seminars
   o 3 seminars
   o 4 seminars
   o 5 seminars

19. Would you be interested in an advanced cooking class? (attendance would be optional)
   o Gluten free cooking
   o Local/sustainable cooking
   o Organic cooking
   o Vegan cooking
   o Vegetarian cooking
   o Other _______________
   o No, I am not interested in additional cooking classes

20. Has a sports nutritionist given a presentation to your team (that you attended)
   o Yes
   o No

23. In the 2-4 hours BEFORE a practice or competition, what kind of foods do you generally consume? (choose all that apply)
   o High carbohydrate (bread, pasta, granola bars, cereal, fruit)
   o High fat (nuts, cheese, red meat)
   o High protein (meat, eggs, dairy)
   o Little to nothing
   o Other _______________

24. AFTER a practice or competition, what kind of foods do you generally consume? (choose all that apply)
   o High carbohydrate (bread, pasta, granola bars)
   o High fat (nuts, cheese, red meat)
   o High protein (meat, eggs, dairy)
   o Little to nothing
   o Other _______________

27. How many 8 ounce cups of fluid do you drink BEFORE a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   o None
   o 1-2 cups
   o 3-4 cups
   o 5+ cups

28. What fluids do you drink BEFORE practice?

29. How many 8 ounce cups of fluid do you drink DURING a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   o None
   o 1-2 cups
   o 3-4 cups
   o 5+ cups

30. What fluids do you drink DURING practice?

31. How many 8 ounce cups of fluid do you drink AFTER a typical practice? (for reference, a bottled water contains 2.5 cups in each bottle)
   o None
   o 1-2 cups
   o 3-4 cups
   o 5+ cups

32. What fluids do you drink AFTER practice?
Table D
Questions Added to the 2016 Performance Nutrition Survey

3. Does nutrition really matter? Indicate how much impact you think your food choices have on your academic & athletic performance:
   - Academic Performance _____ (scale: 0-10)
   - Athletic Performance _____ (scale: 0-10)

6. How many SNACKS do you typically eat per day?
   - 0 snacks
   - 1 snack
   - 2 snacks
   - 3 snacks
   - 4+ snacks

7B. Why might you skip a meal? (choose all that apply)
   - Class is at mealtime
   - Sleeping in
   -...

9B. What is the #1 reason why you don’t eat at the Bistro more often?
   - Wait time is too long
   - Prices are too high
   - Location is not convenient
   - The food doesn’t meet my dietary restrictions
   - The food doesn’t meet my taste preferences
   - Portion sizes are too small
   - Portion sizes are too large
   - Other ______________

12A. During the school year, do you drink any of the following caffeinated beverages? (choose all that apply)
   - Coffee
   - Espresso
   - Tea (using tea bags)
   - Tea (in bottle or can)
   - Regular soda
   - Diet soda
   - Energy drink (Monster, Red Bull, etc)
   - Other ______________
   - None of the above

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   - Rice
   - Cereal
   - Pasta
   - Starchy vegetables (potatoes, corn, squash, etc)
   - Fruit
   - Granola bars
   - Nuts/Seeds
   - Milk
   - Yogurt
   - Cheese
   - Meat
   - Eggs
   - Other____________________

14. AFTER a practice or competition, what kind of foods do you generally consume? (choose all that apply)
   - Bread
   - Rice
   - Cereal
   - Pasta
   - Starchy vegetables (potatoes, corn, squash, etc)
   - Fruit
   - Granola bars
   - Nuts/Seeds
   - Milk
   - Yogurt
   - Cheese
   - Meat
   - Eggs
   - Other____________________

16. How often do you utilize one of the fueling stations?
   - Never
   - Once a month or less
   - Every couple weeks
   - 1-3 days per week
   - 4-5 days per week
   - 6-7 days per week
   - Multiple times every day

17. Are there any foods that are not currently offered at the fueling stations that you would want?

18A. Do you monitor your hydration level?
   - Yes
   - No
Table D (cont’d)
Questions Added to the 2016 Performance Nutrition Survey

19B. What nutrition challenges do you have when traveling? (choose all that apply)
- I eat too much
- I don’t have enough to eat
- Dislike foods provided at catered team meals
- Dislike restaurants picked by coaches/staff
- Restaurant options unhealthy or portion sizes too large
- Not enough money/per diem
- Unreliable meal times
- No healthy snacks available
- Eat too many snacks
- Difficult to find foods that meet my dietary restrictions
- Airport food is expensive or unhealthy
- Other ____________________

20. What supplements are you currently taking? (choose all that apply)
- ...
- Calcium
- ...

21. Where do you get your nutrition information? (choose all that apply)
- ...
- Academic classes
- ...

23. During the school year, what is your biggest hurdle to eating for performance?
- Class is at mealtime
- Healthy food not available at locations I currently eat
- Lack of time
- Not enough money
- Practice is at mealtime
- Too tired to purchase or prepare food
- Other ____________________
- I have no hurdles to eating for performance

24A. Do you feel that you could improve anything in regards to your nutrition lifestyle?
- Yes
- No

24B. If you could improve your nutrition, what would you do? (choose all that apply)
- ...
- Eat fewer sweets
- ...

25. Which of the following would you like to see offered by the Performance Nutrition Department? (choose all that apply)
- Paper handouts, brochures, manuals, etc
- Podcasts
- Phone app
- Email listserv
- More social media options
- Improved website
- Higher level cooking classes
- Other ____________________
- Not interested in additional nutrition information