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NUTRITION KNOWLEDGE OF DIVISION I
TENNIS AND CROSS-COUNTRY COLLEGIATE ATHLETES AT
COASTAL CAROLINA UNIVERSITY
2011

BY

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Abstract

As competition increases, athletes continue to look for ways to gain a competitive edge. A review of the sources reveals that athletes lack nutritional knowledge; this could impair their performance. If athletes were more educated in nutritional knowledge, they would understand the importance of food in fueling one's body. This may dissuade athletes from using unnecessary supplements or ergogenic aids. The purpose of this study is to add to the existing research to determine if Division I collegiate athletes lack nutritional knowledge. To determine this, a dietary behavior and nutritional knowledge questionnaire was conducted with 28 Division I collegiate athletes from Coastal Carolina University's tennis and cross-country teams. The results indicate a lack of knowledge in key areas of nutrition that deal with sport performance. This is important to the field of Exercise and Sport Science because it furthers the evidence that collegiate athletes are not knowledgeable in the area of nutrition. By adding more supportive research, it enhances the idea that nutritional education or nutritional seminars may be an important aspect to add to collegiate athletes training regimen.

Introduction

As competition increases, athletes continue to look for ways to gain a competitive edge. One way athletes are trying to do this is by using ergogenic aids (Ling, Sobal & Marquart, Rosenbloom, Jonnalagadda & Skinner). Ergogenic aids are drugs, substances, or devices that are used to increase performance. Burns, Schiller, Merrick, & Wolf noted a review of 51 studies that found that numerous student athletes have misconceptions about supplements and consumed supplements regardless of their effectiveness. Burns et al found that 65% of athletes incorrectly thought that vitamins provide immediate energy; Jacobsen, Sobonya, & Ransone found that 14.7% of athletes thought vitamins increase muscle strength. These findings indicate the athlete's lack of knowledge regarding ergogenic aids, such as vitamins.

There are also studies that indicate an athletes' lack of basic nutritional knowledge. Barr found that college athletes are lacking in nutritional knowledge and according to Larkin (2005); there is no one-size-fits-all plan that works from one athlete to another. Other studies that support Barr's findings by indicating an athletes' lack in nutritional knowledge include research performed by Dunn, Turner, & Denny. They state that only 50% of questions regarding food choices were answered correctly. Jacobson et al found that there is not only a lack of basic nutritional knowledge, but also a lack of knowledge in the role of essential nutrients. Only 37% of respondents correctly identified the role of vitamins, and only 54.4% of respondents correctly identified the role of proteins.

Research conducted by Dunn et al not only indicates a lack in general nutritional knowledge in athletes but also shows support to Jacobson et al's findings that there is a lack of knowledge in

the role of essential nutrients. Dunn et al states in their research “one topic area that needs improvement is regarding carbohydrate needs; most athletes incorrectly believed that carbohydrates should be decreased in the diet”. This corresponds with the findings of Hinton, Sanford, Davidson, Yakushka, & Beck that only nineteen percent of female and ten percent of male athletes consumed at least the recommended minimum of 6 g carbohydrate/kg body weight (Hinton et al, 394).

The previous studies have had research that supports each other. However, studies have different outcomes when assessing male versus female nutritional knowledge. Rosenbloom et al states that there is no significant difference between the nutritional knowledge of collegiate male and female athletes. However, a study conducted by Jessri, Jessri, RashidKhani, & Zinn (2010) about collegiate athletes’ nutritional knowledge found that “women scored significantly higher in total knowledge...than men” (259). This study, unlike the previous one, took into consideration where athletes obtain their nutritional knowledge. Their results coincide with findings from Scofield and Unruh (2006), finding that the coach was the primary source of nutritional information for most athletes. Findings from Burns et al (2004) and Cole, Salvaterra, Davis, Borja, Powell, Dubbs, & Bordi (2005) indicate that coaches are not the number one source of nutritional information. The results of these studies showed that the number one source of nutritional information came from athletic trainers or strength and conditioning coaches. Jessri et al found that only two athletes out of 212 indicated that a nutritionist or dietitian was in the top three of nutritional information sources. This may be due to the lack of availability of a nutritionist or dietitian on college campuses.

Due to the fact that some research found that coaches are the number one source of nutritional information, Heffner, Ogles, Gold, Marsden, & Johnson studied the nutritional knowledge and

dietary behaviors of female athletes' coaches. It was found that the majority of coaches perform some form of weight management techniques with their athletes, and the gender of the coach did not impact this so much as did the sport that was being coached. The majority of coaches did agree that a 1,500-calorie a day diet would be adequate for most female athletes (Hefner et al). With coaches being such an important aspect in athletes' nutrition, this study, along with the preceding studies proves that the coaches' nutritional knowledge may be just as important as the athletes'.

Another area that raises questions is how to educate athletes about nutritional knowledge. There are various ideas; they range from peer nutrition education classes to professionally taught education programs. Kunkel, Bell, & Luccia (2001) performed a study that used a peer nutrition education program for athletes. It was found that this type of nutritional education program was a useful tool in improving the general and sports nutritional knowledge of female collegiate athletes. This type of program would be beneficial to colleges or universities that have dietetic programs'. However, this program may not work as well for universities that do not have the educated personnel in dietetic programs on campus to teach the education class. Therefore, a look at the other option of professionally taught education programs is needed. Abood, Black, & Birnbaum (2004) completed a study that used 15 female athletes on the swim team and 15 female athletes on the soccer team and determined after 8-weeks of professional nutrition education an increase in not only nutritional knowledge, but also self-efficacy was found.

This study is important because it will add to the existing information on collegiate athletes' nutritional knowledge. Nutritional knowledge is of grave importance to a collegiate athlete because if it is understood that food fuels an athletes body and will enhance or reduce performance it may dissuade athletes from using unnecessary supplements or illegal ergogenic

aids. Nutritional knowledge is also important because research indicates that as athletes' knowledge increases, the nutritional quality of food choices improves (Kunkel et al). At the collegiate level, male and female athletes will not be as knowledgeable in the area of nutrition as they should be. Female athletes and athletes in weight control sports will be more knowledgeable than males and athletes in non-weight controlled sports.

Methods

After obtaining approval from Coastal Carolina University's institution review board, a questionnaire that included demographic information, nutritional behavior and nutritional knowledge was given to 28 athletes. A blank copy of the questionnaire is enclosed. Athletes, which included 6 males and 7 females from Coastal Carolina University's tennis team and 8 males and 7 females from Coastal Carolina University's cross-country teams, were asked to voluntarily participate in the study. The Nutrition Knowledge section of the questionnaire included 27 questions. Each question had at least 4 options for answers or was in an 'agree, disagree, not sure' format. Example questions include, what versions of dairy foods do experts say we should eat? A glass of 100% fruit juice counts as a serving of fruit. Athletes should take supplements. Saturated fats are mainly found in? Questionnaires were distributed at the teams' convenience during team meetings or after practice. Athletes completed the questionnaire using as much time as each found necessary, normally taking approximately 10 minutes. The data was analyzed by hand using averages and percentages to make comparisons.

Results

28 athletes completed the nutrition knowledge questionnaire. 13 were on the tennis team and 15 were on the cross-country team. The tennis team had 6 males and 7 females while the cross-

country team had 8 males and 7 females. Out of these 28 athletes 20 believed that they consumed an adequate amount of calories for their sport. 21 athletes indicated that they consumed a diet of mostly carbohydrates while 7 indicated a diet of mostly protein.

The results of the questionnaire indicate a lack of nutritional knowledge. When asked if there is more protein and calcium in a glass of whole milk than a glass of skim milk, 32% agreed, 50% disagreed, and 18% were unsure. This indicates that half of the athletes did not know the correct answer. When asked what version of dairy foods experts recommend to eat, 46% of the athletes believed low fat while another 46% of the athletes believed a mixture of full and low fat.

Questions involving fat often had more than one answer choice with 5 or more athletes choosing the incorrect answer. For example, when asked which would be the best choice for a low fat, high fiber snack, 21% of athletes selected grilled chicken, 14% selected cheese on whole wheat bread, and 46% selected beans on whole wheat bread. Another question with this outcome was, which fat do experts say is most important for people to reduce? 14% selected monounsaturated fats, 32% selected polyunsaturated fats, and 57% selected saturated fats. Close to 50% of the athletes did not know that saturated fats are found in both animal and dairy products, 29% incorrectly answered vegetable oils while 18% answered animal products. Not only did athletes incorrectly answer the question regarding saturated fats, 25% of athletes were not sure of a type of oil that contains mostly monounsaturated fats and 29% incorrectly answered sunflower oil. Only 39% of athletes correctly answered olive oil. The one question dealing with fat that the majority of athletes answered correctly dealt with reducing the amount of fat in your diet. 64% of athletes knew that grilled turkey would be the best choice.

Hydration and supplement use were another area that had conflicting answers indicating a lack of knowledge. When asked how much water an athlete should drink daily, 36% selected 8-10

glasses while 43% selected 10-12 glasses. An additional hydration question dealt with how often an athlete needs a sports drink, such as Gatorade or Powerade. The question stated that an athlete needs a sports drink every 30 minutes of activity, 36% of athletes agreed, 10% were not sure and 54% correctly disagreed. It is good that over half of the athletes realize that sports drinks are not needed every 30 minutes of activity. However, there are still just under half, 46%, that could be drinking sports drinks, which often have a large amount of sugar, too often. Another question dealing with sports drink asked which electrolytes they included, 68% correctly answered sodium and potassium while the other 32% selected an incorrect answer.

When dealing with athlete supplement use and energy drink use, our findings prove that athletes could benefit from nutrition seminars where they would learn if they eat a healthy, well-balanced diet, supplements are not necessary and learn the dangers of energy drinks. 39% of athletes think that supplements are necessary and 39% do not think they are necessary, while 21% are not sure. As for energy drinks 64% knew that they are not a good option for a quick fuel before practice or competition but there were 32% that thought they were a good option.

Questions that dealt with diet and health related conditions were answered correctly by the majority of the athletes. 79% of athletes knew that the risk of getting a chronic disease like coronary heart disease is lowered with the proper intake of fruits and vegetables. 89% of athletes knew that dietary behaviors affect the risk of developing certain diseases and that nutrition and dietary behaviors affect sport performance as well. Furthermore, 75% of athletes knew that saturated fats were most likely to raise a person's blood cholesterol level. When asked if eating a low fat, low sugar diet could reverse Type II Diabetes, 64% correctly agreed that it could while only 29% were not sure.

A number of questions were correctly answered by over half of the athletes. 93% of athletes agree that whole wheat bread is healthier than white bread. 75% of athletes agree that cottage cheese would be the best choice as a lower fat cheese option. 82% agree that frozen meals are usually high in sodium. 86% agree that eating fast food frequently can hinder sport performance. When asked which of the following contains more calories per gram, 57% knew that fat contained the most calories per gram. Lastly, 96% knew that athletes need more calories than non-athletes.

The last question of the nutrition knowledge questionnaire asked if the athlete would utilize sports nutritionist services if available on campus. Of the 28 athletes, 26 said yes, the 2 athletes that said no were male athletes.

Discussion

The purpose of this study was to evaluate the nutritional knowledge of collegiate athletes. We found that the nutritional knowledge of collegiate athletes could be improved. This is significant because, “it is well recognized that athletic performance is enhanced by optimal nutrition” (Rash et al). Other studies, such as Barr et al, Rosenbloom et al, and Jacobson et al, have also found that the nutritional knowledge of collegiate athletes is fair, or below what it ought to be.

Dunn and colleagues discuss the lack of knowledge that athletes have in the area of where the fuel, or energy, for performance comes from. We found that most athletes, 86%, correctly believe the fuel, or energy, for performance should come from carbohydrates. Unlike previous studies, our study does not indicate a lack of knowledge in this area.

The study conducted by Burns and colleagues indicated a lack of knowledge in the area of supplements. The media could be to blame for the confusion on the use of supplements as well as

the ever-changing NCAA regulations that prohibit athletic department distribution of supplements (Hedrick et al). 39% of athletes agreed and 39% of athletes disagreed that supplements were necessary, 21% did not know. This question alone indicates that athletes could benefit from having nutrition education or nutrition seminars as part of their training regimen where they learn this type of material.

A goal of this study was to compare male and female athletes and sports. Due to time constraints and the Excel Data sheet not being completed to a degree that permits these comparisons with statistical analyses, a simple comparison was made by looking at the demographic data (male vs female) and the sport (tennis vs cross-country). It appears that our findings do agree with findings from Jessri et al, that women scored higher than men in nutritional knowledge. When comparing sports, cross-country athletes appear to be more knowledgeable than tennis athletes. The fact that female, cross-country athletes did appear to be the most knowledgeable could be because of the association between the sport and the emphasis of leanness (Manore et al).

This study was limited by time constraints, the magnitude of the study, and the lack of compliance of certain sports teams. The original plan was to use all teams at Coastal Carolina University and use Excel to analyze the data; this is still currently underway and should be completed by the spring of 2012. We will use statistical analyses to make comparisons between gender, sport, hometown demographic location, and if having had a nutrition class has an effect of nutrition knowledge.

This study should be replicated to include more athletes from a wide array of universities to reduce the limitation of sample size and location. Future research should consider using universities that offer nutrition education programs for athletes and universities that do not. This

could create an important comparison to show whether or not nutrition education programs would be useful to collegiate athletes. Another area for future research should involve examining whether increased nutritional knowledge will decrease supplementation usage.

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