



NUTRITION KNOWLEDGE AMONG ELITE INDIAN BADMINTON PLAYERS

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ABSTRACT

Nutrition plays an important role in the health and performance of athletes. Athletes require the basic nutrition knowledge in order to make the right food choices. This study aimed to assess the nutrition knowledge among elite Indian badminton players who were at the peak of their performance. A cross-sectional study was conducted among 53 elite Indian badminton players of age 15- 23 years. The Nutrition for Sport Knowledge Questionnaire (NSKQ) was used for this purpose. It was observed that the players had poor nutrition knowledge with the mean total score of 21.92% (11.62±8.77) with the highest score in weight management component and the lowest score in the supplements component with a score of 39% (4.7±2.43) and 13.3% (1.60±2.11) respectively. This entails the need for nutrition education among the athletes. This will help in encouraging healthy eating practices thereby contributing to enhancing their performance.

KEYWORDS : Elite Badminton players, Nutrition knowledge, NSKQ, performance.

INTRODUCTION

Good nutrition plays a key role in the performance of athletes not only at the time of training and competition but also during recovery. Badminton is a high intensity intermittent sport which demands a high amount of energy to sustain the player throughout the game. This ability is not only acquired from training but also the food they eat. Good nutrition and hydration is essential for good immune function, weight management, injury prevention, speedy recovery and improvement in the player's ability to focus. This makes it important for the player to have the basic knowledge on nutrition and the foods that can be taken throughout the day including pre, during and post-training and competition.

Studies have been conducted to assess the nutrition knowledge of athletes who play various sports like soccer players,^[10] figure skaters,^[8] rugby players,^[2] hockey players,^[4] baseball players,^[6] tennis players and various other sports.^[6,7] However, there is paucity in the literature as very few studies are conducted to assess the nutrition knowledge among the badminton players. Thus the aim of the current study was to assess the nutritional knowledge among elite Indian Badminton players.

METHOD

Study design - Cross-sectional study

Participants - Players were recruited from three sports academies in Bengaluru. The authorities at the three sports academies were informed about the purpose of the study and written consent was taken from all the three academies to conduct the study. The duration of the study was discussed and a schedule was planned according to the availability of the players.

We included 53 elite badminton players aged 15 to 23 years. The players were selected based on the inclusion criteria – (i) Elite badminton players were recruited. Elite players were defined as those who competed at national and/or international level and had a minimum experience of 24 months of playing the sport.^[13] and (ii) The players should have been practicing for at least four to six hours a day. The non-elite payers and those who were younger or older were excluded. The players were informed about the purpose of the study and the information required from them. Verbal consent was obtained from all the players who participated in this study.

General information

The general information of the players was gathered which included the player's age, gender, educational qualification, level at which the sport is played, years of practice and prior nutrition counselling from a sports nutritionist at any time.

Nutrition knowledge

Nutrition for sports knowledge questionnaire (NSKQ) was used to assess the knowledge of the players. NSKQ included questions based

on six components namely weight management, macronutrients, micronutrients, sports nutrition, supplements and alcohol consumption. The reliability of the questionnaire was found to be $r=0.8$ ($P<0.001$) for the general questions and $r=0.7$ ($P<0.001$) for sports nutrition knowledge questions.^[12] The questions were multiple choice based and minor changes were done to make the questionnaire more suitable for an Indian badminton player.

The total number of questions present in the NSKQ were 89. Of which, nine questions were removed (one from weight management, four from macronutrient, two from micronutrients and two from sports nutrition component) and seven questions were added (one in macronutrient, two in micronutrients, three in sports nutrition and one in alcohol component) and a few questions were modified based on the requirements of the Indian badminton players. The questions were modified in terms of the options provided to the respondents, for example some protein options provided in the tool such as pork, are not commonly consumed in India. Hence, relevant Indian food options were given.

The content validity of the questionnaire was assessed by sending the questionnaire to eight qualified sports nutritionists (panellist) practising in the field. Based on their feedback, a question each on healthy fats, Vitamin D, sports nutrition, pre-event carbohydrate fuelling, protein and alcohol was added. The content validity ratio (CVR) was found to be 0.75 which was the minimum value required to establish the content validity when there were eight panellists/experts. The content validity was computed by the formula proposed by Lawshe.^[11]

Before beginning the study, the players were explained about the study and instructions were given and their doubts were clarified. The questionnaire was handed over to the participants. The participants were then given time to fill the questionnaire in the presence of the researcher.

Statistical analysis

The software used for the statistical analysis was IBM SPSS version 20. The mean \pm SD was used for continuous variables such as age, height, weight and knowledge scores. The frequency distribution was used to examine the categorical variable such as gender, level of education and participants undergone nutrition counselling.

RESULTS**Demographic characteristics**

From the three badminton academies, a total of 53 elite badminton players aged 15-23 years completed the questionnaire. The sample constituted of 49% (n=26) female and 51% (n=27) male participants. The mean age of the players was 17.15±2.06 years. Of the total number of players, 67.9% (n=36) were aged 15-18 years while 32.07% (n=17) 19-23 years old. Of the total participants, fourteen players had previously undergone nutrition counselling from a sports nutritionist.

Nutrition knowledge score on the General Nutrition Knowledge Questionnaire

The mean total knowledge score of athletes was found to be 21.92% indicating poor nutrition knowledge. Among the six components of the questionnaire, the athletes showed the highest knowledge score in the weight management component and the lowest score in the knowledge on supplements [Table 1].

Table 1: Mean and Percent Nutrition Knowledge Scores obtained by the Elite Badminton Players

Components	Total number of questions (T)	Mean \pm SD Score	Mean (%)	Minimum (%)	Maximum (%)
Weight Management	12	4.71 \pm 2.43	39.25	8.33	83.33
Macronutrients	27	8.58 \pm 4.90	31.78	3.70	92.59
Micronutrients	13	4.47 \pm 3.36	34.38	0.00	100
Sports nutrition	14	4.45 \pm 2.53	31.78	0.00	85.71
Supplements	12	1.60 \pm 2.11	13.33	0.00	83.33
Alcohol	9	1.92 \pm 2.17	21.33	0.00	88.88

The mean knowledge score of the players in the weight management component was 39%. Almost 50-60% of the players were aware about energy providing nutrients (n=29), the kind of diet to be followed to meet the energy requirements (n=40) and role of protein substitutes in losing weight (n=31). The highest number of correct responses were obtained for role of protein in muscle building (n=43). The players had least knowledge about the recovery meal options (n=2) and low GI foods (n=5).

The mean score of the knowledge about macronutrients was 31.78%. Almost 40-50% of the players knew about the fat content of honey (n=27) and the amino acids present in egg (n=25). Two-thirds of the players were aware about the protein content of chicken breast (n=34), role of fat in immune system (n=35) and fat content of cheese (n=36). The least number of players knew about the carbohydrate requirement during high intensity training (n=3), the fat content of margarine (n=7), body's ability to synthesise protein (n=9) and the protein content of various foods (n=4).

The mean score of the knowledge on micronutrients was 34.38%. Almost half of the players knew about the antioxidant role of vitamin C (n=28), meat, chicken and fish as a sources of zinc (n=28), importance of iron for women (n=21). Majority of the players (n=43) were aware about the importance of calcium for the bone and also 70% (n=37) players knew about the importance of iron to prevent anaemia. Not many players answered the questions on thiamine, calcium recommendation and the vitamin and mineral consumption in the diet.

The mean score of the sports nutrition knowledge among the badminton players was 31.78%. Players were most aware about the right time for protein intake after training (n=44), hydration during training session (n=24) and the best snack option during an intense 90 minutes training session (n=24). Players had least knowledge about the importance of water intake (n=2), foods to be consumed before (n=8) and during (n=9) a competition and carbohydrate consumption during exercise (n=8).

The mean score of the knowledge on supplement was 13.33% which was the least when compared to the other components. It was observed that the athletes did not have much knowledge about supplements. The least number of players knew about relieving cramps that occurred during exercise (n=1), vitamin C supplementation (n=7), role of vitamin B on the energy levels (n=5), iron supplementation (n=5), creatinine for exercise (n=2), role of Beta-Alanine in muscles (n=7) and effect of supplements on the body composition or performance (n=3).

The mean score of the knowledge on alcohol was 21.33%. Half the players were aware of the effect of alcohol on recovery from injury. The players had poor knowledge regarding a standard drink, the quantity of alcohol consumption considered as binge drinking and the amount of calories provided by one gram of alcohol.

DISCUSSION

The present study aimed to assess the general and sports nutrition

knowledge among elite badminton players. It was observed that the badminton players had a poor nutrition knowledge with an overall mean score of 21.92%. This can potentially impact their performance.

Of the total number of players very few of them had undergone nutrition counselling from a qualified sports nutritionist (26%). The athletes had better knowledge about protein when compared to carbohydrates and fats. The players mostly focused on muscle building and strength and hence consumed BCAA supplements often during the season of competitions and hence were more aware about the protein sources. Most of them were advised by their coaches regarding the protein supplements. On the other hand, the athletes lacked knowledge on the type of carbohydrate, amount that could be consumed and also the time of consumption whether before, during or after the competition.

The knowledge of the players on calcium was good although they were unaware of the importance of vitamin D which is important and most often neglected as the sport is played indoors. This is probably because much of the focus of the players and their coaches revolves around the macronutrients especially proteins. Micronutrients are usually neglected and most of them were unaware about their importance.

They also had poor knowledge about supplements. This can be mainly because the athletes were consuming only one kind of supplement namely BCAA which was recommended by their coaches. The athletes also had a poor knowledge regarding alcohol. This could be because it was rarely discussed among the coaches and the players. The players were aware that alcohol consumption was an unhealthy practice and could affect their performance.

Studies have also shown that nutrition knowledge plays an important role in adopting optimal nutrition practices.^[2] A study conducted by Speed, on 26 elite badminton players showed a nutrition knowledge score of 65.3% which was much greater than the current study.^[3] Other studies conducted on NCAA Division III football players and male Rugby league players also showed better nutrition knowledge of 55.2% and 72.82% respectively.^[1,2] Few studies have highlighted the lack of knowledge among hockey, rugby and soccer players.^[2,4,10]

Elite athletes reach their peak performance during the adolescent and early adulthood. This is a period during which nutrition plays an important role in their growth and development. The athletes usually have a stringent routine where their fitness is mainly focused and nutrition is most often overlooked by the trainers, coaches and the athletes themselves. This makes it important for the athletes to have the basic nutrition knowledge that can help them make the right food choices thereby making their training more effective and fruitful. Although nutrition is a very broad subject, the athletes can be guided on the basics of nutrition with respect to their particular sport. This can help them make their own dietary choices that can help keep them active throughout their period of training or competition.

CONCLUSION

In the present study, the elite badminton players had a poor nutrition knowledge. This can be mainly due to the absence of any education or training regarding nutritional practices for sports persons. In such situations, players mainly rely on the information obtained from the social media which can be misleading. This establishes the need for adequate nutrition education of the players by qualified sports nutritionists.

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