International Journal of Physiology, Nutrition and Physical Education

Kusuma Neela Bolla
Faculty Sri Durga Malleswara
Siddhartha Mahila Kalasala,
Vijayawada, Andhra Pradesh,
India

KN Varalakshmi
Faculty Sri Durga Malleswara
Siddhartha Mahila Kalasala,
Vijayawada, Andhra Pradesh,
India

Assessment of nutritional status among sports persons

Kusuma Neela Bolla and KN Varalakshmi

Abstract
A majority of the advice is a general nature and may not take into account the athletes or sport person body composition and age, specific sport, duration, intensity, actual intake and training or competition needs. To be of maximum benefits, advice should be tailored to the individual athletes and sports. Knowledge of sport nutrition is lacking in some areas. Good nutrition is essential to support an athletes growth, strength and stamina. Parents and coaches can use the following nutrition information to help young sportspersons feel energetic and perform their best. This study is designed to know the sportspersons nutritional status by measuring their anthropometric and dietary pattern and educated the sportspersons about nutrition importance to increase their performance.

Introduction

Today the competitive sportsman has been made aware of the important role that nutrition can play in both training as well as competition, for there is clear evidence to show that improved eating habits not only benefit health but also influence an individual's endurance and capacity to perform exercise. Changing your diet will not automatically make you run faster or jump higher. Diet is just one of the many factors involved in improving athletic performance.

Sports nutrition focuses its studies on the type, as well as the quality of fluids and food taken by an athlete. Nutrition is an important component of any physical fitness program. The main dietary goal for active individuals is to obtain adequate nutrition to optimize health and fitness or sports performance. The type of foods that should include in diet for optimum nutrition and growth. In addition, it deals with the consumption of nutrient such as vitamins, minerals, supplements and organic substance. Factors that may affect an athletes nutritional needs include type of activity, gender, weight, height, body mass index, workout or activity stage (pre workout, intro workout, recovery) and time of day. A proper diet will reduce the disturbances like way of performance, fatigue, injury and soreness. A proper diet is to get a variety of food and to consume all the macro nutrients as vitamins and minerals as needed. According to elber's article (2008), it is deals to chose raw foods, unprocessed foods such as whole fruit instead of fruit juice because processed foods normally reduces the nutritive intake. There is a strong evidence that appropriate selection of nutrients, timing of intake and proper supplement choice are associated with optimal health and exercise performances. Nutrition plays an important for attaining high levels of achievements in sports and athletics, physical fitness and training are very much depended on nutritional status of sports personal. Diet significantly influences the performance of athletes.

The purpose of this study was to assess the nutritional status of sports persons highlighting their anthropometric and dietary factors. The participants were educated on nutritional importances to increase or maintain their performances.

Methodology

The participants of the study were 110 sport persons aged between 18-35years selected through the purposive random sampling method. The sports person was selected based on their willingness to participate in the study. Interview schedule was designed to elicit information from all sport persons on their socioeconomic background, personal habits, details regarding sports profile, nutritional profile. Nutritional profile include the data about the anthropometeric measurements – height, weight and body mass index.

Correspondence
Kusuma Neela Bolla
Faculty Sri Durga Malleswara
Siddhartha Mahila Kalasala,
Vijayawada, Andhra Pradesh,
India

Biochemical assessments as haemoglobin levels, and dietary assessment as dietary pattern, food consumption pattern through 24hr recall method, the intake of nutrients to know the clear idea about their nutritional status. Nutrition education program was carried out for the participants by oral presentation and distribution of pamphlets. The data was consolidated, tabulated and statistically using percentages, mean, standard values, correlation and other.

Results and discussion

Table 1: Demographic Information of the selected sports person

s.no	Particulars	% of participants	
		Males	Females
1	**Gender**	**68**	**42**
2	Age (years) 18-20 21-24 25-30	28 31 9	25 12 5
3	Religion Hindu Christian Muslim	41 23 4	27 12 3
4	Family type Nuclear Joint	46 22	30 12
5	Personal habits Smoking Tobacco Alcoholism none	14 4 6 44	2 - 1 39

From the above table results showed that distribution of participants based on gender as 68 are male and 42 are female sports persons. Of the selected 28 participants are 18 -20years of age, 31 are 21-24years and 12 are 25-30years in males, as in females 24 are 18-20years, 12 are 20 – 24 years and 3 are 25-30years. The major religious category among the selected participants was Hindus as 41 males and 27 are females, Christians 23 in males and 12 are females, as well Muslims 4 and 3 participants. The family type of the subjects showed 40 in nuclear and 26 are in joint of males participants, in female 30 are nuclear and 12 are joint participants. It is heart warming to note personal habits of the selected participants, 14 are having the smoking habit in males and 2 are in female group, in males 4 are tobacco chewing subjects and 6 are alcoholic as well in females 1 are alcoholic but majority 44 &39 of males and females are does not have any personal habits.

Anthropometric measurements

Body weight is the most widely used and sensitive and simplest reproducible antheropometric measurement for the evaluation of nutritional status of individuals. It indicates the body mass and is a composite of all body constitutes like water, minerals, fat, protein and bone. It reflects more recent nutrition than dose height. Height is affected only by long term nutritional deprivation; it is considered an index of chronic or long duration malnutrition.

Table 2: Anthropometric Data of male participants

Age	Height	Weight	BMI
18-20	168.5±6.91	54.99±7.84	20.45±1.31
21-24	167.7±6.42	56.87±7.34	20.13±1.86
25-30	170.6±7.92	63.92±5.4	21.89±2.9

The participants are grouped as the 18-20 years of age with mean height 168.5cms and weight 54.99kg, 21-24 years aged participants showed the mean height of 167.7cms and 56.87kgs of weight as well 25-30years of age have the mean height of 170.6cms and 63.92kgs of weight, all the 3 grouped participants are represented in the normal Body Mass Index.

Table 3: Anthropometric Data of female participants

Age	Height	Weight	BMI
18-20	162.75±8.02	56.06±9.39	21.02±3.2
21-24	156.2±5.02	50.23±6.2	21.74±2.63
25-30	163.5±6.8	54.61±8.32	22.94±2.09

Female participants are also grouped as 18-21 years and they having the mean height of 162.75cms and 56.06kg weight, 20-24 years participants are showing the mean height was 156.2cms and mean weight was 50.23kgs and 25-30years participants are 163.5cms height and 54.61kg of weight and all the females participants are also in normal Body Mass Index at range of 18.5 to 24.9kg/m^2.

Table 4: Distribution of subjects according to BMI

BMI Classification	Males		Females	
	Number	Percentage	Number	Percentage
<18.5	6	8.82	4	7.69
18.5-24.9	48	70.58	25	48.07
25-29.9	8	11.76	8	34.61
30-34.9	4	5.88	5	9.6
35-39.9	2	2.94	0	0
>40.0	0	0	0	0

The above table represents the number and percentage of the total participants according to the BMI. The data is classified based on the WHO BMI. from the above table it is clear that majority of the participants were 70.58% in males and 48.07% in females are in normal BMI. In female participants there is no grade 2 and grade 3 obesity categories.

Table 5: Dietary Pattern

s.no	Particulars	Percentage of sport persons	
		Males	Females
1	Diet Vegetarian Non vegetarians Ova vegetarians	12 54 2	8 31 3
2	Daily meal patterns Twice Thrice More than thrice Twice with snacks Thrice with snacks	20 28 3 12 5	12 19 2 7 2
3	Skipping meals Breakfast Lunch Dinner No skipping	11 13 20 24	7 5 16 14
4	Junk foods preferred Fried foods Bakery foods Chat items Soft drinks Other	12 21 3 28 4	8 14 2 7 11

Dietary pattern or meal consumption of sportspersons are very important to known the intake of daily nutrient consumption. The above table dietary pattern shows that majority of

participants 54 males 31 females are non vegetarians and 12 males 8 females are vegetarians and 2 males 3 females are ovo vegetarians. daily consumption of meals pattern showed that 28 males, 19 females are eating thrice a day and 20 males, 12 females are consuming twice a day, 12 males and 7 females are consuming twice with snacks and 5 males, 2 females consuming thrice with snacks and 3 males, 2 females are consuming more than thrice per a day. Skipping meals is also very common problem in all age groups as well in participants 24 males, 14 females are not skipping meals and 20 males, 16 females skipping dinner and 13 males, 5 females are skipping lunch and 11 males and 12 females are skipping breakfast in their day menu. As well many candidates in taking some of the junk foods which gives high calories.

Table 6: Mean Energy Expenditure And Food Intake

	Energy expenditure	Energy intake	Correlation coefficient	T test
Before	4345.29	3161.19	0.658	3.24
after	4345.29	4128.18	0.77	0.1904

The physical activity i.e. the daily energy expenditure is calculated according the Bouchard *et al* 1983 by using the physical activity standard and also energy intake i.e, calorie intake is calculated.
Table 3 mean energy expenditure & energy intake of athletes. The mean energy intake is 3161.19 k.cal and the mean energy expenditure is 4345.29 k.cal per day. The correlation coefficient vale is 0.6584 which is the negative energy balance after the nutritional awareness or education the mean value of energy expenditure for the subjects is 4345.229 k.cal and the energy intake is 4128.18 k.cal and the correlation coefficient value is 0.7705 which shows the positive energy balance

Conclusion
The present study was conducted to assess the nutritional status of the selected sportspersons in the local community. In this study the majority of the participants are belong to the nuclear family, non vegetarians, eating bakery foods as their junk foods. When energy expenditure and energy intake is compared it clearly showed that energy expenditure is high compared to the energy intake that resembles that their nutrient intake is very low. The participants of the present study had a below average nutritional status. The reason may be poor nutritional knowledge which is reflected in their nutrient intake. Based on this results, nutrition education is conducted to the participants to get an awareness to combat the nutritional deficiency disorders as well to increase their performance during the event or post the event.

References
1. Tipton KD, Wolfe RR. Protein and amino acids for athletes. J Sports Sci. 2004; 22:65-79.
2. Anonymous. Carbohydrates in human nutrition FAO Food and Nutrition Paper No. 66., FAO/WHO, Geneva, 1998.
3. Fleck SJ. Body composition of elite American athlete. American.J. Sports Med. 1983; 51:398-403.
4. Gopalan C, Vijayraghavan R. Nutrition atlas of India, NIN, ICMR, Hyderabad, 1971.
5. Lean ME, Han TS, Morrison CE. Waist circumference as a measurement for indicating need for weight management. British Med. J. 1995; 42:33-36.
6. Moffatt RJ. Dietary status of elite female high school gymnasts: Inadequacy of vitamin and mineral intake. J. American Diet. Assoc. 1984; 84:1361-1363.
7. Nickerson HJ, Holubets MC, Weiler BR, Hass RG, Schwartz S, Ellefson ME. Etiology and incidence of iron deficiency in adolescent athletes. Colloquem Inserm, 1990; 197:291-298.
8. American College of Sports Medicine, American Dietetic Association. and Dietitians of Canada. Joint Position Statement Nutrition and athletic performance. Med Sci Sports Exerc, 2000; 32:2130-2145.
9. Burke LM *et al*. Carbohydrates and fat for training and recovery. J Sports Sci. 2004; 22:15-30.
10. Tarnopolsky MA *et al*. Nutritional needs of elite athletes. Part I: Carbohydrate and fluid requirements. Eur J Sports Sci. 2005; 5:3-14.
11. Sathya narayana K, Rao NBS, Rao MS, Malhotra MS. Recommended Dietary Intakes for Indian Sports men and Women, NIN, Hyderabad. Sohni, H. and Singh, I., 1997, Nutrient intake and physical efficiency of sportsmen. J. Res. Punjab Agric. Univ. 1985; 34:354-359.
12. Tiglner SA, Schiller MR. Dietary intake of female college athletes: The need for nutrition education. J. American Diet. Assoc. 1989; 89:967-968.
13. Varley H. Practical Clinical biochemistry. Fourth edition, Arnold Hleinemann Publication. (India) Pvt. Ltd., New Delhi, 1976, 10-15.