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Assessment of nutritional status of sports persons in Allahabad District

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Abstract
Nutrition is an important component of any physical fitness program. The dietary goal for active individuals is to obtain adequate nutrition to optimize health and fitness or sports performance. The main aim of this study was to assess the nutritional status of sports person in Allahabad district. Two hundred sports persons (18-26years) were selected through the random sampling method from two different universities situated in Allahabad district, Uttar Pradesh. Sports person's nutritional status was assessed by gathering information on the Dietary intake, Food frequency. Pretested schedule was used in order to collect data from the respondents. The collected data were statistically analyzed. It was found that 47.5 percent respondents were non-vegetarian, 22 percent respondents were vegetarian and 30.5 percent respondents were eggitarian. Maximum 50.5 percent of the respondents followed the four meal pattern (Breakfast + Lunch + Snacks + Dinner). The diet survey revealed that cereals, pulses, vegetables, fats and oil and sugar were consumed on a daily basis by all the respondents consumed. Among the female respondents the average nutrient intake of calorie, protein, fat, carbohydrate, iron and calcium were less than RDA. The average intake of the nutrient of male respondents i.e., calorie, protein were less than RDA and nutrient intake i.e., fat, carbohydrate, iron, calcium were higher than the RDA. The findings of the present study indicate that nutritional status of selected sports persons in Allahabad district was poor. There exists a dietary inadequacy of both macro and micronutrients.

Keywords: sports person, nutritional status, dietary intake, food frequency

Introduction
The importance of good nutrition and hydration in sports has grown in popularity in recent years. The significance of a healthy balanced diet and its links to good health and improved sports performance is now a key aspect of the sportsperson's lifestyle; whether they are an elite athlete preparing for World championships or Olympic events, a semi-professional competitor aiming to continue performing or amateur participants who just want to improve their chances of winning. The demands of rigorous training and competition schedules can have negative effects on the health of every sports participant, but the individual's diet, linked to the recovery process, can have a considerable effect on performance (Narwal, 2014) [7]. Involving the sports performer in the planning of their diet can result in improved health benefits, as well as promoting adequate refuelling and hydration, leading to improved sporting performance. Any adjustment to the nutrition plan can also be linked to energy requirements and expenditure for a variety of different sports and events Burke *et al.,* 2011) [2]. Macronutrients are most often the focus of diets but micronutrients, vitamins and minerals, are also an important aspect of an athlete's diet. When energy intake is sufficient it is not likely that micronutrient inadequacies will be present, but in cases of low energy intake, such as are common in some athletes, micronutrient inadequacies can be found (Pearson, 2010). Vitamins are important for the regulation of metabolic processes, synthesis of energy, proper function of neurological processes, and prevention of the destruction of cells in the body. Minerals play an important role in the structure for tissues, are an important component of enzymes and hormones, and regulate metabolic and neural processes (Purcell, 2013) [10]. Micronutrients in general are vital in the repair of muscle tissue during recovery, which is especially important for athletes. When vitamin and mineral intake is inadequate, not only will effectiveness of recovery be reduced, but exercise capacity may also be reduced, making the athlete less effective in both practice and game situations. Although they are not often focused on, vitamins and minerals can be turned over much quicker in an athlete and therefore are sometimes needed in greater amount (Melissa *et al.,* 2012). Certain athletes, especially those involved in weight-loss practices or diet restrictions, because of low energy intake, are more susceptible to vitamin and mineral loss and their diets should be monitored. It is suggested that these types of athletes will benefit from a daily multi-vitamin and mineral supplement. In general, this benefit is not to performance, but to overall health of the athlete, however, in some severely deficient athletes, it is thought that mineral supplementation may enhance exercise capacity. The Academy of Nutrition and Dietetics, American College of Sports Medicine, (2016).

Method and Material
A cross-sectional and descriptive design was used in this study

among population of sports persons belongs to Allahabad district. Sam Higginbottom University of Agriculture, Technology and Sciences, University of Allahabad, were selected for the study. The students who are performing in trials during different sports competitions were selected as a population of the study. The selection of the respondents was based on the random sampling from the population of the study. Total number of 200 respondents were selected i.e. 100 respondents from each university was selected including both male and female for study purpose. Pretested schedule was used in order to collect data from the respondents. The schedule was including aspects which were lead to the fulfilment of the objective of this study. The selected respondents were personally interviewed with the help of schedule that contained questions related to general profile, dietary survey, 24 dietary recalls. 24 hours dietary recall method and food frequency table method are used for the nutritional assessment of the sports person. The data were tabulated and analyzed statistically.

Result and Discussions

Table 1: Frequency Distribution of the respondents According to Their Participation in Various Sports

Name of Sport	N=200	Percentage (%)
Cricket	36	18
Football	31	15.5
Volleyball	20	10
Hockey	31	15.5
Basketball	17	8.5
Badminton	16	8
Running	23	11.5
Boxing	15	7.5
Kabaddi	11	5.5
Total	200	100

Table.1 shows the distribution of respondents according to their sports and it was found that maximum respondents were cricketers (18 percent) followed by Hockey players and foot ball players which were 15.5 percent, 11.5 percent respondents were runners, 10 percent respondents were volley ball players, 8.5 percent respondents were basket ball players, 8 percent respondents were badminton players, 7.5 percent respondent were boxers and 5.5 percent respondents were playing kabaddi.

Dietary and Nutritional information of the respondent

Table 2: Distribution of the respondents according to their food habits, dietary pattern

S. No.	Particular	N=200	Percentage (%)
1.	Food habits		
	Vegetarian	44	22
	Non vegetarian	95	47.5
	Eggitarian	61	30.5
2.	Dietary pattern		
	Type A	38	19
	Type B	105	52.50
	Type C	21	10.50
	Type D	36	18

Type 'A' Early Morning + Breakfast + Mid-Morning + Lunch + Snacks + Dinner + Bed Time
Type 'B' Breakfast + Lunch + Snacks + Dinner
Type 'C' Breakfast + Mid-Morning + Lunch + Dinner
Type 'D' Mid-Morning + Lunch + Dinner

Table 2 respondents were divided into three groups according to Food Habits i.e. Vegetarian, Non-Vegetarian and Egg-eating and it was found that out of total respondents maximum respondents 47.5 percent were non-vegetarian, 22 percent were vegetarian and 30.5 were eggetarian. This table.2also reveal that maximum respondents 50.5 percent who had type 'B' dietary pattern followed 19 percent who had type 'A' dietary pattern and about 18 percent had type 'D' dietary pattern and about 10.5 percent had type 'C' dietary pattern.

Table 3: Distribution of the respondents according to their food consumption frequency

Food Groups	Daily		Weekly		Monthly		Occasionally		Never	
	N=200	%	N=200	%	N=200	%	N=200	%	N=200	%
Cereals	200	100	-	-	-	-	-	-	-	-
Pulses	187	93.5	13	6.5	-	-	-	-	-	-
Milk& milk product	138	69	62	31	-	-	-	-	-	-
Egg	45	22.5	48	24	37	18.5	26	13	44	22
GLVs	67	33.5	70	35	36	18	22	11	5	2.5
Root & Tubers	102	51	77	38.5	21	10.5	-	-	-	-
Fruits	107	53.5	72	36	21	10.5				
Meat & Poultry	36	18	27	13.5	23	11.5	9	4.5	105	52.5
Fats & OIL	200	100	-	-	-	-	-	-	-	-
Sugar & Jaggery	200	100	-	-	-	-	-	-	-	-

Table.3 shows that the food consumed daily by all respondents included cereals, pulses, milk and milk products, green leafy vegetables, roots and tubers, fruits, meat and poultry, fats and oil and sugar. Regarding the consumption of cereals, it was found that all respondents consumed cereals daily. The table.3 depicts that pulses were consumed daily by 93.5 percent respondents and 6.5 percent respondent were consumed weekly. Milk and milk products were consumed daily by 69 percent respondents and 31 percent consumed it weekly. 22.5 percent respondents had consumed egg every day, where as 24 percent respondents had consumed egg weekly, 18.5 percent respondent had consumed monthly 13 percent as well as 22 percent respondents never consumed egg. Regarding green leafy vegetables they consumed daily by

33.5 percent, 35 percent respondents had consumed weekly, 18 percent respondents consumed them monthly and 11 percent respondents consumed occasionally and about 2.5 percent never consume green leafy vegetables. Root and tuber were consumed every day by 51.5 percent respondent, 38.5 percent respondent had consumed weekly, and 10.5 percent respondent had consumed them monthly. Other vegetables were consumed by all respondents. Fruits were consumed by 53.5 percent respondent daily, 36 percent respondent had consumed fruits weekly, and 10.5 percent were consumed monthly. Meat and poultry were consumed by 18 percent respondents every day. 13.5 percent respondent were consumed weekly, 11.5 percent respondent were consumed monthly, 4.5 percent consumed them occasionally and about 52.5 percent respondent were never consumed them. Fats and oils were consumed almost daily by all respondents.

Table 4: Average daily nutrient intake of female sports person

Parameter	Energy (kcal/d)	Protein (g/d)	Fat (g/d)	CHO (g/d)	Iron (mg/d)	Calcium (mg/d)
Average Intake	1931.85	44.43	17	287.29	18.29	425.88
S.E	±6.584	±0.527	±5.852	±0.182	±0.151	±8.142
RDA	3600	82.5	30	585	21	600
Difference	-1668.15	-38.07	-13	-297.71	-2.71	-174
t-value(cal)	64.05	18.01	10.71	20.33	26.36	11.41
t-table	1.67	1.67	1.67	1.67	1.67	1.67
Result	S	S	S	S	S	S

(N=62) S= significant (level of significant is 5 percent)

Table.4 shows the average nutrient intake of all the nutrient with reference to energy, protein, fat, carbohydrate, iron, calcium compared to the recommended dietary allowances (RDA) given by ICMR. (Srilakshmi, 2014) [11] The result found from the female sports person was not at a desired level. It was found from the result that the average intake of major nutrient group i.e., energy, protein, carbohydrate, fat, iron, calcium were very less than the recommended dietary allowances given by ICMR. The average nutrient intake of calorie was (1931.85kcal/day), protein (44.5gm/day), fat (17gm/day), carbohydrate (287.29gam/day), iron (18.29mg/day) calcium (425.88mg/day). Hawk (2014) [4] also found that in females, mean calcium was significantly lower and did not reach recommended daily intake. On applying t-test, significant differences was found between intake and RDA for calories, proteins, fat, carbohydrate, iron, calcium as the calculated t value (64.05 for calorie, 18.01 for protein, 10.71 for fat, 20.33 for carbohydrate, 26.36 for iron, 11.41 for calcium) was more than the table value of t (1.67). Narwa (2014) [7] also found that the intake of total calories, carbohydrate, proteins and fats were normal in sports women but less than RDA.

Table 5: Average daily nutrient intake of male sports person

Parameter	Energy (kcal/d)	Protein (g/d)	Fat (g/d)	CHO (g/d)	Iron (mg/d)	Calcium (mg/d)
Intake	3442.31	103	48.6	851	36.35	864.21
S.E	±73.482	±4.273	±1.561	±41.852	±1.236	±38.507
RDA	4500	120	40	731.25	17	600
Difference	-1057.69	-17	+8.6	+119.75	+19.35	+264.21
t-value(cal)	6.88	3.57	4.57	2.99	4.31	3.29
t-table	1.65	1.65	1.65	1.65	1.65	1.65
Result	S	S	S	S	S	S

(N=138) S= significant (level of significant is 5 percent)

Table 4.3.4 shows that the average intake of the nutrient of male respondents and it was found from the result that the average intake of nutrient i.e., energy, protein were less than the recommended dietary allowances given by ICMR. The average nutrient intake of calorie was (3442.31kcal/day), protein (103gm/day). But the major nutrient intake i.e., fat, carbohydrate, iron, calcium were higher than the RDA. The average nutrient intakes of fat (48.6gm/day), carbohydrate (851gam/day), iron (36.35mg/day) calcium (864.21mg/day) were higher than RDA. On applying t- test, significant differences was found between intake and RDA for calories, proteins, fat, carbohydrate, iron, calcium as the calculated t value (6.88 for calorie, 3.57 for protein, 4.57 for fat, 2.99 for carbohydrate, 26.36 for iron, 3.29 for calcium) was more than the table value of t (1.65).

Conclusion

On the basis of present investigation it is concluded that the nutrient intakes of female sports person such as energy, protein, carbohydrate, fat, iron, calcium were lesser than RDA. The average intakes of male sports person were better than female. The intake of nutrients such as fat, carbohydrates, iron and calcium were higher in male according to RDA.

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