



## Assessment of Nutritional Status and Knowledge, Attitude and Practice of Football Players

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### Abstract

Sports Nutrition is defined as a field of nutrition which deals with the use of vital nutrients through proper diet of sports athletes in their day-to-day life in order to improve their performance in sports events or competition. This study aims to identify the dietary habits of the football players, to evaluate their nutritional status and their performance skills in Meghalaya. A comparative study of 60 male football players between the age group of 18-30 years selected randomly from a football club in Shillong and Jowai (30 players from Shillong and 30 players from Jowai) was conducted in 2020, in Shillong and Jowai, Meghalaya. Self-made questionnaires were used to gather data including the participants' anthropometric measurements, their dietary habits, their knowledge, attitude and practice (KAP) towards sports nutrition and their physical fitness. Using SPSS software for WINDOWS (version 20), all the collected data were statistically analysed and the results were tabulated and evaluated. After providing nutrition education, it is observed that 86.6 per cent of the respondents in Shillong have good knowledge, whereas in Jowai, 96.6 per cent of the respondents have good knowledge; 76.6 per cent of the respondents in Shillong have good attitude, whereas in Jowai, 86.6 per cent of the respondents have good attitude; 6.6 per cent of the respondents in Shillong have good practice, while the respondents in Jowai have 23.3 per cent of good practice. The average intake of cereals is 560.20 for Area-1 which is higher than the average intake for Area-2 of 536.63; the average intake of Meat is 65.00 for Area-1 which is higher than the average intake for Area-2 of 62.23. The average BMI is 22.05 for Area-1 which is higher than the average BMI for Area-2 of 21.92; the average Haemoglobin level is 15.39 for Area-1 which is higher than the average Haemoglobin level for Area-2 of 15.33. However, *t*-test value 0.325 is not significant as the Significance value is greater than 0.05. Sports nutrition is unique to each person and is planned according to individual goals. A sports nutrition diet may vary daily, depending on specific energy demands. It was evident that the knowledge, attitude and practice of the football players had improved tremendously after providing nutrition education, and by using this improved knowledge, they will also be able to improve their dietary habits and consumption patterns.

**Keywords:** Sports nutrition, Knowledge, Football, Attitude, Performance.

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### Introduction

Sports Nutrition is defined as a field of nutrition which deals with the use of vital nutrients through proper diet of sports athletes in their day-to-day life in order to improve their performance in sports events or competition. It is important to know about sports nutrition because it helps an athlete to maintain an optimum level of his nutritional requirement which will enhance his performance in sports. As an athlete, he should be able to maintain his daily nutritional requirements based on the sport that is playing in order to test the ability of his body. Nutrition plays a vital role in sports as good diet is required before, after and at the time of sports events. It is a fundamental regulation that

an athlete's food intake should be 2 hours before workout and the food should be rich in carbohydrates with adequate proteins and minimum quantities of fat. Carbohydrates are essential for providing fuel during physical activity and proteins help to build up muscle growth (Indoria and Singh, 2016).

Football can be defined as moderate to extended period of physical training which involves frequent rounds of elevated amounts of exercise intermixed with short to moderate time of improvement or submissive breaks during exercise. Football is distinguished by the reasonable or extended intervals travelled by the player during an event, such as 8 to 12 km from the physical viewpoint, but also the inconsistent movement pattern, for instance, walking, tackling, sprinting, heading, jumping, backing and jogging are involved in excess of 800 movement pattern in each football event. The performance of the football player is determined mainly by the strength, skill and flexibility of the player in the

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sport (Burke, 2010).

Football has been the most well-known sport worldwide. It is pre-arranged so that two differing teams are strongly coordinated, since a single-sided team is not entertaining for the players as well as for the audience. Every player and every team therefore has to make every effort to accomplish the benefit that is needed for them to succeed. Food has the major influence on exercise. Food influence achievement and the foods preferred by the athletes will affect how well they will participate and how well they are skilled. Proper food preferences can support modifications to the preparation motivation which can start to additional enhancement for the similar weight of exercise. It is fundamental to obtain the accurate level of stamina in order to remain in good physical shape and to achieve satisfactorily in a match. A football player's consumption of energy from food, fluids and supplements can be obtained from food records that have been weighed or measured for usually 3-7 days, a 24-hour dietary recall or it can also be obtained from food frequency questionnaires. As an athlete, there are many advantages of healthy eating. These include: 1) best possible benefits from a training program 2) better improvement within and between workouts and proceedings 3) accomplishment and continuation of having an ideal body weight and physique 4) a decreased threat of injury and illness 5) self-assurance in being well-gearred up for a match play 6) reliability in accomplishing elevated level achievements in matches 7) satisfaction of food and social eating occasions (Perlepe, 2016).

Dieticians must think about a variety of sport-definite elements that include the regulations, stadium size, time of competition, regularity of matches and duration of seasons (including the season as a whole: pre-season, competition season and off-season) when evaluating a player's dietary demands and ambitions. Moreover, the body uniqueness and position-definite tasks of the sport will further impact the dietary demands of the players. Nutritional recommendation for football players should be personalized because of the sport-definite elements, body uniqueness and position dissimilarity. Nutritional advices that help athletes to eat plenty of energy-dense foods and the accurate stability of macronutrients and micronutrients, with proper timings to improve performance and recovery will permit athletes to prepare and perform ideally. Those that fall short in consuming energy or keep up with a diet that encloses the proper stability of macronutrients may discover that this obstructs on modifications of working out and improvement. Insufficiency in energy can have indications for an athlete's achievement including a depletion of fat free mass, disorder in immune functions, reduction of bone mineral density, greater vulnerability to injury and greater occurrence of symptoms of overtraining (Jenner et al., 2019).

The main meal before a football match must be taken between 2-4 hours before the start. It should be based on carbohydrates and to avoid stomach discomfort,

foods low in fibre and fat are preferable. It is important for the footballers to optimize the stores of carbohydrates in the muscles and liver (in the form of glycogen) with the will to compete with a maximum energy reserve and they should stay well hydrated before any football match or competition. Therefore, in order to make the athletes aware about the correct practices that are to be adopted by them to improve their nutritional status, this study on "Sports Nutrition for Football Players" has been planned with the following objectives:

- i. To assess the nutritional status of football players.
- ii. To provide education to the football athletes regarding the importance of food and nutrition and functional foods to enhance their performance.
- iii. To improve the nutritional knowledge, attitude and practice of football players.

## Materials and Methods

### Study Design

The study design to be carried out for this study is a comparative study. A comparative study or research is a research methodology in the social sciences that aims to make comparisons across different countries or cultures. Comparative research, simply put, is the act of comparing two or more things with a view to discover something about one or all of the things being compared. This technique often utilizes multiple disciplines in one study.

### Selection of study area

The study was carried out on the athletes of football sport residing in Shillong, Meghalaya. To fulfill the objectives, the study was confined to a football club known as Rangdajied United FC and the study was conducted in the Jawaharlal Nehru Football Stadium situated in Polo-Lawmali, Golf Links, Shillong, Meghalaya (Khasi Hills District) and also in Kiang Nangbah Football Stadium situated in KNB Road, Jowai, Meghalaya (Jaintia Hills District) where daily football practice regularly takes place every morning. The area for the study was selected based on:

- Ease of transportation and accessibility to the study area
- Time constraint on the part of the participants, coaches and the researcher

### Selection of Samples and Sample Size

A group of 60 football players (30 players from Shillong and 30 players from Jowai) of the male gender belonging to the age group of 18-30 years were selected for the study. The inclusion criteria of the samples were based on:

- Permission granted by the Secretary of the football club and the coaches of the football players.
- Informed consent of the athletes
- Willingness of the athletes to participate.

**a. Assessment of nutritional status by anthropometric evaluation and biochemical assessment of haemoglobin levels**

Anthropometry is a series of systematized measuring techniques that express quantitatively the dimension of the human body and skeleton. It is often viewed as a traditional and perhaps the basic tool of biological anthropology, but it has a long tradition of use in forensic sciences and it is finding increased use in medical sciences especially in the discipline of forensic medicine. Anthropometry measurements are used to characterize body type/body composition. The nutritional status of the football players was assessed by using anthropometric measurements of height, weight, BMI, body fat composition using skinfold measurement of the chest, thigh and abdominal region.

Biochemical assessment was also done to evaluate the haemoglobin level of each football athlete. With the assistance of a certified laboratory technician, the blood sample of the respondents was drawn by using a clean and sterilized syringe needle up to 20 µl, and then the blood samples were taken to the laboratory for further evaluation of the levels of haemoglobin. The blood samples were collected only after informing the participants that blood samples of 20 µl will be drawn from each one of them for the purpose of checking their haemoglobin level.

**b. Collection of data on the dietary habits of football players using food frequency consumption and 24-hour dietary recall.**

The data on the dietary habits of the football players was obtained by using well-framed and standardized questionnaires based on food frequency consumption and 24-hour dietary recall. The respondents were also asked about whether they are vegetarian or non-vegetarian, while conducting a survey in the study area. The information obtained was coded, tabulated and components have been subjected to statistical analysis for description of the practices and dietary habits of the football athletes.

**c. Administration of Performance Tests and Evaluating and Recording Results**

The performance tests administered to the football athletes were those related to the skills of the athletes and those tests which evaluate the physical fitness of each athlete. The tests used for evaluating performance of the athletes were Vertical Jump test, Sprint Fatigue test, Sprint time over 40 meters, Sit and Reach test, Figure 8 Dribbling test and McDonald Soccer test. These were administered and the scoring was given accordingly to each respective test.

**d. Assessment of Pre-KAP (Knowledge, Attitude and Practice) score of the athletes using Pre-KAP questionnaires**

Assessment of Pre-KAP score was done before giving nutrition education to the football athletes. The statements given in the Pre-KAP questionnaire are mainly focused on sports nutrition with statements related to macronutrients, micronutrients like iron,

vitamin C and vitamin D and antioxidants, sports supplements, physical activity of the athletes and their personal hygiene.

**e. Providing nutrition education to the football players and distributing pamphlets to each one of them**

Nutritional education was given to the football athletes during a face-to-face interaction with them on the topic “The Importance of Food and Nutrition and Functional Foods to Enhance Performance” by means of a power-point presentation.

After providing nutrition education to the athletes, a pamphlet was distributed to each one of them. These pamphlets were given to them so that they can refer to it anytime which in turn will help in improving their nutritional intake and dietary habits. The pamphlet consisted of nutritional recommendations regarding protein supplements, antioxidants, fluid intake, important minerals like iron, vitamin C and vitamin D and calcium, carbohydrate loading and personal hygiene.

**f. Assessment of Post-KAP score of the athletes using post-KAP questionnaires after 15 days of providing nutrition education.**

After 15 days of providing nutrition education to the football players on “The Importance of Food and Nutrition and Functional Foods to Enhance Performance”, the post-KAP score was assessed by using Post-KAP questionnaire which consisted of the same statements as the Pre-KAP questionnaire. The purpose of assessing the post-KAP score is to evaluate and determine the impact that the nutrition education has on the athletes after it has been provided to them and to see whether it has improved the knowledge, attitude and practice of the football athletes. The retention of both Pre-KAP and Post-KAP scores was also calculated.

**Statistical Analysis**

All data collected using different parameters were statistically analyzed and the results obtained were tabulated. T test and Percentage were used for this study and were calculated with the use of SPSS for WINDOWS (Version 20; SPSS Inc, Chicago). A t-test is a statistical test that is used to compare the means of two groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the population of interest, or whether two groups are different from one another. Percentile (or a centile) is a score below which a given percentage of scores in its frequency distribution fall (exclusive definition) or a score at or below which a given percentage fall (inclusive definition).

**Results and Discussion**

**Dietary habits of the football players**

The dietary habits of the football players were assessed by using the food frequency consumption and the 24-hour dietary recall. Table 1 shows the food

frequency consumption pattern of the respondents on a basis of daily, weekly, monthly and occasionally for each food group.

Table 1. Food Frequency Consumption Pattern of the respondents

Food groups	Consumption frequency			
	Daily	Weekly	Monthly	Occasionally
Cereals	88.33%	11.66%		
Pulses	6.66%	85%	5%	3.33%
Milk and milk products	20%	75%	1.66%	3.33%
Fruits	23.33%	71.66%	5%	--
Green leafy vegetables	30%	68.33%	1.66%	--
Roots and tubers	10%	88.33%	1.66%	--
Fats and oils	91.66%	8.33%	--	--
Sugars and confectionaries	98.33%	1.66%	--	--
Meat and poultry	26.66%	73.33%	--	--

In the above table, Cereals were consumed 88.33 per cent daily and 11.66 per cent weekly; Pulses were consumed 6.66 per cent daily, 85 per cent weekly, 5 per cent monthly and 3.33 per cent occasionally; Milk and milk products were consumed 20 per cent daily, 75 per cent weekly, 1.66 per cent monthly and 3.33 per cent occasionally; Fruits were consumed 23.33 per cent daily, 71.66 per cent weekly and 5 per cent monthly; Green leafy vegetables were consumed 30 per cent daily, 68.33 per cent weekly and 1.66 per cent monthly; Roots and tubers were consumed 10 per cent daily, 88.33 per cent weekly and 1.66 per cent monthly; Fats and oils were consumed 91.66 per cent daily and 8.33 per cent weekly; Sugars and confectionaries were consumed 98.33 per cent daily and 1.66 per cent weekly; Meat and poultry were consumed 26.66 per cent daily and 73.33 per cent weekly.

#### Pre knowledge, attitude and practice (KAP) score of the football athletes

Knowledge is gathered by methods of studying and these may be formal or informal direction, distinctive incident and innovative distribution. It has been commonly accepted that knowledge is spontaneously expressed into actions. Nonetheless, knowledge is not worthless, and it is established to be important in the reasonable screening of details in the

attitude-behaviour interconnection.

Attitude encompasses assessment of ideas related with the manner of how people think, feel and behave. It involves a rational, sentimental and an observable element indicating what a person knows, how a person feels and what a person does. It has also been presumed that attitudes may affect one's desire to act in a specified manner or habit. Practice is the action of going over a habit again and again, or taking part in a task over and over, with the aim of enhancing or overcoming it. Practice indicates the means in which it illustrates its knowledge and attitude through its behaviour.

The Knowledge, Attitude and Practice (KAP) assessment was carried out among 30 football athletes from Shillong, Meghalaya and 30 football athletes from Jowai, Meghalaya. The knowledge, attitude and practice of the football players was assessed using a three-point knowledge, attitude and practice scale on sports nutrition practices parameters. The Pre Knowledge, Attitude and Practice scores were collected initially in both the regions before giving nutrition education to the athletes. The pre knowledge, attitude and practice scores were the actual knowledge, attitude and practice of the football athletes or the respondents regarding their sports nutrition practices and these are given in table II and table 3 below:

Table 2. Percentage distribution of the respondents in Shillong according to their sports nutrition knowledge, attitude and practice score before nutrition education

Parameters	Knowledge		Attitude		Practice	
	Number (n=30)	Percentage (%)	Number (n=30)	Percentage (%)	Number (n=30)	Percentage (%)
Poor ( $\leq 50$ )	10	33.3%	29	96.6%	30	100%
Average (50-75)	20	66.6%	1	3.33%	nil	nil
Good ( $\geq 75$ )	nil	nil	nil	nil	nil	nil

Table 3. Percentage distribution of the respondents in Jowai according to their sports nutrition knowledge, attitude and practice score before nutrition education

Parameters	Knowledge		Attitude		Practice	
	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)
Poor ( $\leq 50$ )	8	26.6%	19	63.3%	30	100%
Average (50-75)	22	73.3%	11	36.6%	nil	nil
Good ( $\geq 75$ )	nil	nil	nil	nil	nil	nil

On comparing table 2 and table 3, it is shown that 33.3 per cent of the respondents in Shillong had poor knowledge whereas in Jowai, 26.6 per cent had poor knowledge; 66.6 per cent of the respondents in Shillong had average knowledge, whereas 73.3 per cent of the respondents in Jowai had average knowledge; but none of the respondents from both the regions had good knowledge. In comparison to table 3, table 2 shows that 96.6 per cent of the respondents in Shillong had poor attitude, whereas in Jowai, 63.3 per cent of the respondents had poor attitude; 3.33 per cent of the respondents in Shillong had average attitude, whereas 36.6 per cent of the respondents in Jowai had average attitude; but none of the respondents from both the regions had good attitude. Again, on comparing table 2 and table 3, it is evident that in both Shillong and Jowai,

100 per cent of the respondents had poor practice in sports nutrition and neither of them had average nor good practice.

#### Post knowledge, attitude and practice (KAP) score of the football athletes

After providing nutrition education on “The Importance of Food and Nutrition and Functional Foods to Enhance Performance”, the Post Knowledge, attitude and practice score of the football athletes were collected from 30 respondents in Shillong and 30 respondents in Jowai after 15 days. The post KAP scores of the athletes from Shillong and Jowai are given below in table 4 and table 5 respectively, and these scores were compared accordingly between the two regions.

Table 4. Percentage distribution of the respondents in Shillong according to their sports nutrition knowledge, attitude and practice score after nutrition education post 15 days

Parameters	Knowledge		Attitude		Practice	
	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)
Poor ( $\leq 50$ )	nil	nil	nil	nil	7	23.3%
Average (50-75)	4	13.3%	7	23.3%	21	70%
Good ( $\geq 75$ )	26	86.6%	23	76.6%	2	6.6%

Table 5. Percentage distribution of the respondents in Jowai according to their sports nutrition knowledge, attitude and practice score after nutrition education post 15 days

Parameters	Knowledge		Attitude		Practice	
	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)	Numbers (n=30)	Percentage (%)
Poor ( $\leq 50$ )	nil	nil	nil	nil	7	23.3%
Average (50-75)	1	3.33%	4	13.3%	16	53.3%
Good ( $\geq 75$ )	29	96.6%	26	86.6%	7	23.3%

From the tables 4 and 5, it is observed that 13.3 per cent of the respondents in Shillong have average knowledge, whereas in Jowai, 3.33 per cent of the respondents have average knowledge; 86.6 per cent of the respondents in Shillong have good knowledge, whereas in Jowai, 96.6 per cent of the respondents have good knowledge and none of the athletes from the both the regions have poor knowledge after providing nutrition education to them. Also, 23.3 per cent of the respondents in Shillong have average attitude, whereas in Jowai, 13.3 per cent of the respondents have average

attitude; 76.6 per cent of the respondents in Shillong have good attitude, whereas in Jowai, 86.6 per cent of the respondents have good attitude, but none of the respondents have poor attitude towards sports nutrition post 15 days of providing nutrition education. Further, 70 per cent of the respondents in Shillong have average practice, while, the respondents in Jowai have average practice of 53.3 per cent; 6.6 per cent of the respondents in Shillong have good practice, while the respondents in Jowai have 23.3 per cent of good practice. It is also observed that the respondents from both Shillong and

Jowai have 23.3 per cent of poor practice towards sports nutrition even after giving nutrition education to them.

**Retention of Knowledge of the Respondents after Nutrition Education**

After comparing the post Knowledge, Attitude and Practice scores of the respondents between a gap of 15 days before and after nutrition education, the retention of Knowledge, Attitude and Practice score of the respondents from Shillong and Jowai were calculated separately. For the respondents in Shillong, initially it is seen that their knowledge was quite poor but after nutrition education was given and after a gap of fifteen days their knowledge has definitely increased as compared to the pre-Knowledge, Attitude and Practice score before nutrition education. After fifteen days, there is an increase in knowledge, attitude and practice scores of the respondents in Shillong by 33.3%, 53.3% and 86.6% respectively as most information were retained. For the respondents in Jowai, initially it is observed that they had average knowledge about sports nutrition and after nutrition education was provided to them and after a gap of fifteen days, their knowledge has improved tremendously as compared to their pre-Knowledge,

Attitude and Practice scores before providing nutrition education. After fifteen days, there is an increase in knowledge, attitude and practice scores of the respondents in Jowai by 26.6%, 69.9% and 96.6% respectively with the information being retained.

**Impact of Nutrition Education**

Nutrition education is a set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviours conducive to health and well-being. Nutrition education was given to the football players on the topic “The Importance of Food and Nutrition and Functional Foods to Enhance Performance”. While providing nutrition education, the football players seemed to be interested to learn about sports nutrition and they even came up with necessary questions which were expected to be asked by them if they have any doubts regarding the particular topic that was explained to them. The athletes showed positive response during and after nutrition education was provided to them and therefore this resulted in an increase and improvement in their knowledge, attitude and practice. It also helped them to improve their daily lifestyle.

**Statistical Analysis**

**Comparison between Area-1 and Area-2 (Anthropometric measurements)**

Table 4. *t- Test on Anthropometric Measurements*

Anthropome- tric measurements	Paired Differences				t	df	Sig.	S / NS
	Mean		Std. Deviation					
	Area-1	Area-2	Area-1	Area-2				
Age	21.23	20.20	3.05	2.02	1.547	58	.127	NS
BMI	22.05	21.92	2.01	1.99	0.261	58	.795	NS
Body fat%	6.88	6.28	2.13	1.80	1.179	58	.243	NS
Hb level	15.39	15.33	.68	.59	.325	58	.746	NS

T- Test is done to test whether average age is significantly different between Area-1 and Area-2. The calculated value is given above. The significance level is shown under the column ‘Sig.’ If the significance level is less than 0.05 then there is significant difference between Area-1 and Area-2 in the average age, this is called significant at 5% level. If the significance level is less than 0.01 then there is significant difference between Area-1 and Area-2 in the average age, this is called significant at 1% level. If the significance level is greater than 0.05 then there is no significant difference between Area-1 and Area-2 in the average age, this is called as Not significant.

In table 4:

- ✓ The average age is 21.23 for Area-1 which is higher than the Area-2 average age of 20.20. However t-test value 1.547 is not significant as the Significance value is greater than 0.05.
- ✓ The average BMI is 22.05 for Area-1 which is higher than the average BMI for Area-2 of 21.92. However, t-test value 0.261 is not significant as the Significance value is greater than 0.05.
- ✓ The average Body fat composition is 6.88 for Area-1 which higher than the average Body fat percentage for Area-2 of 6.28. However, t-test value 1.179 is not significant as the Significance value is greater than 0.05.

- ✓ The average Haemoglobin level is 15.39 for Area-1 which is higher than the average Haemoglobin level for Area-2 of 15.33.

However, t-test value 0.325 is not significant as the Significance value is greater than 0.05.

Comparison between Area-1 and Area-2 (24 hour Dietary recall)

Table 7. *t*- Test on 24 hour Dietary Recall

Food Items	Paired Differences				t	df	Sig.	S / NS
	Mean		Std. Deviation					
	Area-1	Area-2	Area-1	Area-2				
Cereals	560.20	536.63	145.36	109.21	0.710	58	.481	NS
Eggs	60.39	58.69	21.56	21.15	0.252	38	.802	NS
Fruits	57.17	59.33	15.18	16.17	0.535	58	.595	NS
Green leafy vegetables	660.71	645.83	237.80	232.15	0.227	50	.821	NS
Other vegetables	254.50	254.81	7.59	22.08	0.061	45	.952	NS
Meat	65.00	62.23	22.30	20.49	0.500	58	.619	NS
Milk	143.03	176.17	107.13	105.45	1.207	58	.232	NS
Pulses	139.83	142.86	38.39	37.80	0.300	55	.765	NS
Roots and tubers	125.00	128.57	25.46	28.64	0.493	54	.624	NS

In table 7:

- ✓ The average intake of cereals is 560.20 for Area-1 which is higher than the average intake for Area-2 of 536.63. However, t-test value 0.710 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Eggs is 60.39 for Area-1 which is higher than the average intake for Area-2 of 58.69. However, t-test value 0.252 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Fruits is 57.17 for Area-1 which is lower than the average intake for Area-2 of 59.33. However, t-test value of 0.535 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Green leafy vegetables is 660.71 for Area-1 which is higher than the average intake for Area-2 of 645.83. However, t-test value 0.227 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Other vegetables is 254.50 for Area-1 which is slightly lower than the average intake for Area-2 of 254.81.

However, t-test value 0.061 is not significant as the Significance value is greater than 0.05.

- ✓ The average intake of Meat is 65.00 for Area-1 which is higher than the average intake for Area-2 of 62.23. However, t-test value 0.500 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Milk is 143.03 for Area-1 which is lower than the average intake for Area-2 of 176.17. However, t-test value 1.207 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Pulses is 139.83 for Area-1 which is lower than the average intake for Area-2 of 142.86. However, t-test value 0.300 is not significant as the Significance value is greater than 0.05.
- ✓ The average intake of Roots and tubers is 125.00 for Area-1 which is lower than the average intake for Area-2 of 128.57. However, t-test value 0.493 is not significant as the Significance value is greater than 0.05.

Comparison between Area-1 and Area-2 (Physical Fitness)

Table 8. *t*-Test on Physical Fitness Performance Tests

Physical Fitness tests	Paired Differences				t	df	Sig.	S / NS
	Mean		Std. Deviation					
	Area-1	Area-2	Area-1	Area-2				
Vertical Jump Test	41.67	36.70	9.96	7.70	2.161	58	.035	S
Sprint time over 40 meters	8.25	8.40	.99	1.04	0.571	58	.570	NS
Sprint Fatigue Test	93.73	92.60	4.91	6.26	0.780	58	.438	NS
Sit and Reach Test	15.73	15.53	4.04	3.68	0.200	58	.842	NS

In table 8:

- ✓ The average score for Vertical jump test is 41.67 for Area-1 which is higher than the average score for Area-2 of 36.70. However, t-test value 2.161 is significant at 5% level as the Significance value is less than 0.05.
- ✓ The average score for Sprint time over 40 meters is 8.25 for Area-1 which is lower than the average score for Area-2 of 8.40. However, t-test value 0.571 is not significant as the Significance value is greater than 0.05.
- ✓ The average score for Sprint Fatigue Test is 93.73 for Area-1 which is higher than the average score for Area-2 of 92.60. However, t-test value 0.780 is not significant as the Significance value is greater than 0.05.
- ✓ The average score for Sit and Reach test is 15.73 for Area-1 which is higher than the average score for Area-2 of 15.53. However, t-test value 0.200 is not significant as the Significance value is greater than 0.05.

Comparison between Area-1 and Area-2 (Skill – related Tests)

Table 9. *t*-Test on Skill-related Performance Tests

Skill – related tests	Paired Differences				t	df	Sig.	S / NS
	Mean		Std. Deviation					
	Area-1	Area-2	Area-1	Area-2				
Figure 8 Dribbling Test	16.65	16.09	2.38	2.89	0.818	58	.417	NS
McDonald Soccer Test	18.62	17.43	4.92	2.95	1.129	58	.263	NS

In table 9

- ✓ The average score for Figure 8 dribbling test is 16.65 for Area-1 which is higher than the average score for Area-2 of 16.09. However, t-test value 0.818 is not significant as the Significance value is greater than 0.05.
- ✓ The average score for McDonald soccer test is 18.62 for Area-1 which is higher than the average score for Area-2 of 17.43. However, t-test value 1.129 is not significant as the Significance value is greater than 0.05.

little knowledge about sports nutrition before nutrition education was given to them which resulted in their poor practices regarding their diet, physical activity and personal hygiene. After nutrition education was provided to the athletes, it was evident that their knowledge, attitude and practice towards sports nutrition had improved. Regarding their dietary habits and food preference, there is still need for improvement and this can be done by nutrition interventions and also by diet counseling or practicing healthy eating habits and making good choices when it comes to choosing food items.

**Conclusion**

Sports Nutrition is unique to each person and is planned according to individual goals. A sports nutrition diet may vary daily, depending on specific energy demands. This study reveals that the football athletes had

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