



Original Research Article

Impact of a Pre Game Meal on the Performance Level of Female Foot Ball Players

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ABSTRACT

Nutrition and exercise physiology share a natural linkage and form the foundation for physical performance. Compared to the average person, sports person have significantly higher requirements for energy and many other nutrients. Their diet should be based on actual requirements, determined by body size, physiological and bio-chemical parameters. High energy supplements have shown to increase the performance of physical activity. A pre game meal was development to test it efficacy in the performance level of the foot ball player. The pregame meal was given 2hour before the event in empty stomach to 10 female sort students trained for the foot ball event. The difference in the performance level was noted before and after the administration of the pregame meal. The study showed a significant improvement in the performance level of the female foot ball player.

INTRODUCTION

The human body cannot function at optimum capacity without the proper chemical and nutritional environment. Many body systems must intertwine and play a part of nature and grow. Biochemical changes during growth and strenuous activity demand more nutrients and nourishment.

Nutrition and exercise physiology share a natural linkage and form the foundation for physical performance. It

provides fuel for biological week and chemicals for extracting and using the potential energy within this fuel. Nutrients from food also provide essential elements for repairing existing cells and synthesizing new tissues.

The role of nutrition and its importance in human health and well being is inevitable. Nutrition plays an important role for attaining high level of achievement in sports and athletes, besides other factors such as motivation, skills, techniques,

commitment, physical fitness and training.^[1]

Success in sports depends on three factors –genetic endowments, the state of training and nutrition. As genetic makeup of an individual cannot be changed, specialized exercise training coupled with intellectual choice of nutrients can be a mantra for improving the overall performance of a sports person.

For decades, the area of sports nutrition are often thought to be reserved for only “athletes”, which insinuates the inclusion of only those individual who are performing at the elite level. The term athlete refers to any individual who is regulating activities ranging from fitness enthusiast to the competitive amateurs or professional. Differences may exist in specific nutrient needs along their designated spectrum of athletes creating the existing challenge of individualizing sports nutrition plan

According to Mahan^[1] for an athlete to perform to her best ability, the body must be optimally fueled. Not only nutrition is important on the playing field, but also it promotes muscle growth, enhances recovery, prevent injury and supports rehabilitation. Any health professional involved in the care of athletes needs to understand the basis of sports nutrition from macronutrient and micronutrient requirements to weight management and supplements.^[2]

Although various studies regarding the interaction between nutrition and various forms of sports and exercise were carried out for more than hundred years, Sharkey^[3] opinion that, it is only in the past few decades that extensive research has been undertaken regarding specific recommendation to athletes.

Compared to the average person, sports person have significantly higher requirements for energy and many other

nutrients. Their diet should be based on actual requirements, determined by body size, physiological and bio-chemical parameters. Athletes should work closely with individuals who are training in nutrition to set appropriate goals to develop weight management protocol that promote healthy eating.

In athletic training performance, carbohydrate and fat are the major source of energy. The amount of fat used during exercise depends upon the duration and intensity of events, degree of prior training and the comparison of diet. Physical exercise performed under various sports events will promote fat usage as a source of energy. There is a good reason to increase body’s ability to burn fat as fuel; using fat as a source of energy will spare muscle glycogen.^[4]

The effects of nutritional interventions on performance in terms games like foot ball, basket ball and volley ball are less explored, because changes in performance are hard to measure accurately in these sports. A small numbers of researchers have used lab tests, simulated games or real games to measure the effect of hydration status and carbohydrate feeding on simulated game performance. The lack of consistency in the outcomes of these studies may be due to lack of precision in the measurement of performance, differences between athletes or sports in the effects of the nutritional intervention, or differences in environmental conditions between studies.^[5] However, the fluid and energy requirements in a team game may differ considerably from those of an endurance event, so the advice should be tempered by common sense and experience.

Team sports require players to perform multiple work bouts at near maximal effort, punctuated with intervals of low intensity exercise or test for the duration of a game. Such activity patterns are

associated with a significant loss of body water which has a negative impact on physical and mental performance as well as temperature regulation. Hence a pregame meal that nourishes the muscle mass and meet out the water loss can prove futile for increased performance.

High energy supplements have shown to increase the performance of physical activity. A study done at the University of Texas saw a 4.7 per cent increase of performance in 83 per cent of participants after drinking Red Bull Energy Drink which was more intense than the compared placebo. The energy drink most dominantly increased the epinephrine and nor epinephrine levels and beta endorphins in the blood than before consumption. Caffeine carbohydrates and vitamin B are factors that may have favored performance increase with no change in perceived exertion (Bernard et al., 2009).

A pre-game meal has many goals to enhance performance. First, it improves performance by improving body composition, which increases speed, quickness, mobility and strength. Second, it will help the speed of recovery, which will in turn create more capacity for practicing and competition as the body is becoming more fit and adjusted to the coupling of the good nutrition incorporated into the workout regimen. Third, it will allow one to increase energy for both practice and competition, which will definitely help one's performance.^[6]

Many athletes consider taking dietary supplements in the form of a pre-game meal, as they look forward for a magic ingredient" to increase performance Pre-game meal plays important role in athletic performance. Science indicates the pre-game meals or snacks should include plenty of fluids and be light and easy to digest.^[7] It should provide below 300-800 kcal primarily. Provide carbohydrate rich foods

that are similar and well tolerated by the athletes. The product should be good in taste and provide extra energy and should provide complete nutrition. They can be useful as a pre-game meal or a between meal snack but they should not replace regular meals

New studies projected that milk, especially whole milk and chocolate milk may be the new sports drink as milk leads to protein synthesis which boosts net muscle protein balance.^[8] Milk naturally contains many electrolytes, nutrients and other properties that help to make it a great post exercise beverage.

When compared to plain drinks or sports drinks, research suggests that chocolate milk is more effective at replacing fluids lost as sweat and maintaining normal body fluid level.^[9]

Many athletes, from high school sports through the pro-level, have come to believe that taking some type of supplement, varying from protein shakes to build muscle mass will give them an edge in their athletic endeavor.^[10]

Throwers, jumpers, athletes and group events like basket ball, volley ball and football, require speed, strength power and a wide variety of technical skills to be successful in their events. Only a handful of studies have assessed the nutritional needs of such athletes and players. Because of this, recommendations for nutritional requirement to support and enhance training and competition performances for these athletes and players are made using research findings from sports and exercise protocols similar to their training and competitive events. The goals of the preparation cycle of nutrition per iodization for these athletes and player include attaining desirable body weight, a high ratio of lean body mass to body weight and improving muscular power. Hence the study title 'Impact of a pre-game meal on pre and post performance level of

selected female foot ball players' was carried out with the following objectives.

- Collect the basic information of the selected female sports students.
- Assess the anthropometric, clinical and dietary practices of the selected female sports students.
- Develop a pre-game meal and study its acceptability.
- Find the impact of 'the developed pre-game meal' on the performance level of female foot ball player

METHODOLOGY

The methodology pertaining to the study entitled "Impact of a Pre-Game Meal on Pre and Post Performance Level of Selected foot ball player" is discussed under the following heading.

A. Selection of the sample

A private institution in the city of Coimbatore, which academically trains students on various sports events, was conveniently selected for the conduct of the study. A total of 54 female students in the age group of 17-20 years doing their undergraduate in the department of Physical Education were purposively selected for the conduct of the study.

B. Collection of data and conduct of study

A well structured interview schedule was developed by the investigators to collect data on the back ground information, anthropometric, clinical and dietary intake of the selected female sport students.

i) Background Information

The background information for name, age, sex, educational status, family details, parent's occupational and income status were elicited using an interview schedule.

ii) Anthropometric Assessment

To assess the nutritional status of the female sports student, the height, weight,

BMI, waist circumference, hip circumference, Waist to Hip-ratio (WHR) and chest circumference of the selected female sports students were measured.

a) Weight

Body Weight is the most widely used sensitive and simplest reproducible anthropometric measurement for the evaluation of nutritional status of any individual. It indicates the body mass and a composite of all body constituents like water, mineral, fat, protein, and bone.

Using a bath room weighing scale the weight of the individual was measured under basal conditions with minimum clothing and without shoes. The zero error of the weighing scale was checked and calibrated before taking the weight.

b) Height

By using a stadiometer the height of the subjects was measured. The subjects were asked to stand erect on a leveled surface with heels together and toe apart, without shoes. The moving head piece of the stadiometer was lowered to rest flat on the top of the head and the reading was taken to the nearest $\frac{1}{4}$ " or 0.5cm.

c) Body Mass Index (BMI)

Based on the height and weight, the BMI was calculated for all the 54 female sport students. The calculated values were then compared with the WHO standard. Based on their BMI values, the sport students were thus graded as underweight (18.5- 20.0), Normal (20.0-25.0), Obese Grade -I (23.0- 30.0) and Obese Grade -II (>30).

d) Waist Circumference and Hip Circumference

By using a non-stretchable measuring tape, the waist circumferences of the selected female sports students was measured. The subjects were asked to stand erect and the measuring tape was put around the abdominal portion to measure the waist circumference and the pelvis portion to

measure the hip circumference. From the Waist and Hip Circumference, the Waist / Hip ratio was calculated and the calculated value was compared with ICMR standards.

Clinical Assessment

Using Jellifies table of clinical assessment the investigators observed the female sports students for clinical signs and symptoms for various macro and micro nutritional deficiencies disorder.

Dietary Habits

Information on dietary habits like meal pattern of the individual, their food likes and dislikes and skipping of meals were elicited. The intake of various food groups and their frequency of consumption were ascertained by using a pre-tested food frequency table. The life style behavior of the selected female sports students was studied for their type of activities, duration of activities, work out patterns and their exercise pattern.

The investigator also obtained opinion regarding the intake of Pre- Game Meals and their benefits during events. The willingness to consume a Pre- Game Meal when administered was also obtained.

Weighment Survey

To assess the actual nutrient intake of the female students, a food weighment survey was done for a sub samples of 30 students selected at random for three consecutive days.

Using an electronic weighing balance all the ingredients of the days menu was measured prior to cooking. At the time of serving the food to the female sport students, the actual

amount of food portioned to their plate was measured using the same weighing balance. The students were observed during their meal timing and the leftover food in plate was again weighed. To find out the actual nutrient intake, cooked volume of food was converted to its raw equivalent and the nutritive value for both macro and micro nutrients for the raw equivalents was calculated using the nutritive value of Indian food by ICMR/NIN. The adequacy of nutrient intake by the female sports students was then compared with RDA of normal sedentary women.

C. Development of pre-game meal

To test the impact of a nutrient supplement on the performance level of the female sports students, a pre-game meal was developed by the investigator. By trial and error method various ingredients were selected for the preparation of the pre-game meal. Finally based on the nutritional and functional properties, only six ingredients namely banana powder, soya isolate, chocolate powder, cashew nut, green gram dhal and jaggery were selected. The green gram dhal and cashew nuts were dried roasted and were made into a fine powder. The jaggery was also powdered and made into syrup and the rest of the ingredients were procured in powdered form from the retail market.

Two variations of the pre-game meal with varying proportions (table I) of ingredients were prepared

Table I. Variations of pre-game meal

S.No	Variation I		Variation II	
1.	Banana powder	10g	Banana powder	20 g
2.	Soya isolate	7.5 g	Soya isolate	15 g
3.	Chocolate powder	7.5 g	Chocolate powder	15 g
4.	Jaggery	25 g	Jaggery	25 g
5.	Green gram dhal	10 g	Green gram dhal	20 g
6.	Cashew nut	7.5 g	Cashew nut	15 g

The selected ingredients were mixed in 250ml of milk and were blenderized into a fine liquid of thick consistency. The prepared variations were then tested for its acceptability using a panel of 25 members on a five point rating scale. Based on the acceptability score the pre-game meal of variation I was selected to study the impact on the pre and post performance level of the selected female students. The pre-game meal thus accepted for the study was analyzed for its nutrient content for both macro and micro nutrients using standard procedure.

D. Impact of the pre-game meal

To test the impact of the pre-game meal on the pre and post performance level of the female students. A sub-samples of 10 trained female foot ball players were selected through purposive sampling. The

performance of these students for the foot ball were tested using a standard tool namely ball changing zig-zag test.

Foot Ball – Ball changing Zig-zag test

Five cones were placed at a distance of 10 feet from the starting point, the players with a foot ball under her right arm, kick the ball in a zig-zag movement by passing the ball to right side of the first cone and to the left side of the second cone and so on till she completes the round by reaching the starting point. Each player was given two trial. (Fig-1) The number of kick made and the completion of rounds in one minute was scored. The average points for the two trials were taken for the evaluation .The test was repeated for five consecutive days before and after supplementation.

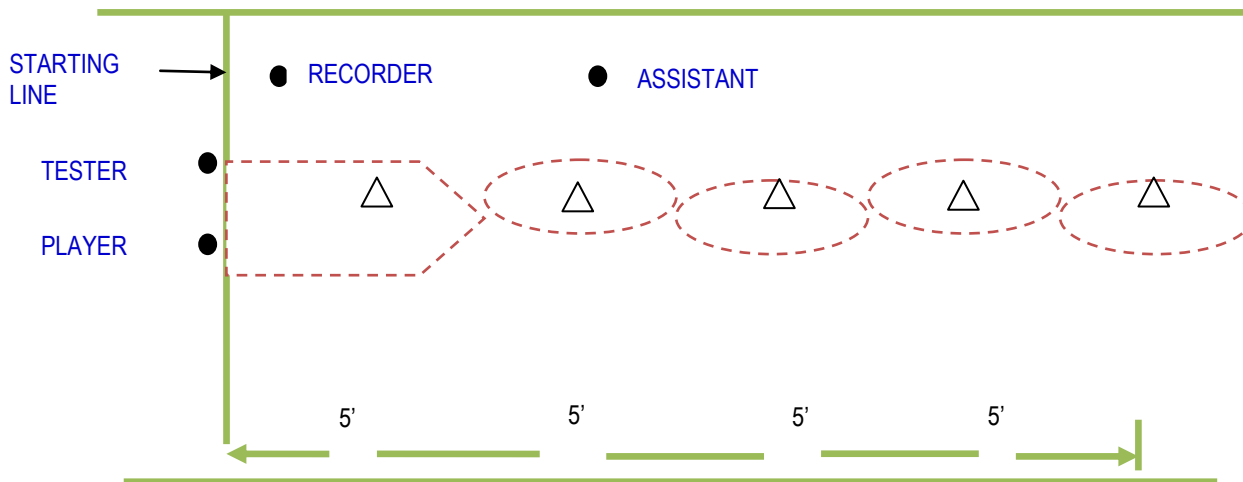


Figure 1 Ball Changing Zig-Zag Test

Assessment of impact

A 250 ml of the pre game meal was administered to the student in the empty stomach 2 hour prior to the event and were test for improvement in their performance by repeating the test. The score before and after administration of pre-game meal was tested with appropriate statistical tool.

Background Information

The background information of the female athletes like age, family details

monthly income, educational and occupational status was elicited using an interview schedule. The findings indicated that thirty students were in the age group of 18-19 years while 20 students were in age group of 19-20 years. Out of 54 students, 21 students were doing their Ist year under graduation and 16 students were doing their IIIrd year under graduation in physical education. Out of 54 students, 35 student’s parents were found to be working as laborer

and 10 student's parents were business men. Thirty two female sport students belonged to a low income category with their monthly earning less than Rs.7000/- per month. Only ten students were found to be in high income category with their earnings more than Rs.10,000/- per month (Table II). Forty eight out of 54 students lived in nuclear family. Thirty eight students lived in small family with 4-5 members and only four students were found to be living with more than six members in their family.

Table II. Income status of the female sports students.

Monthly Income (in Rs.)	No. of students (N=54)
Economically weaker section(<3000)	nil
Low income -(3000-7000)	32
Middle income -(7000-10000)	12
High income-(>Rs.10000)	10

B. Anthropometric Measurements

The anthropometric measurements for height, weight, waist circumference and hip circumference of the female sport students were measured using standard

techniques. The findings on the anthropometric details are furnished in the following tables.

Body Mass Index (BMI)

From the measured height and weight, the BMI was calculated and was then compared with WHO standard. On comparison 21 out of 54 female sport students were found to be underweight with their BMI below 18.50 which can be attributed to their regular physical work out and poor dietary habits. Also, 29 students had normal BMI and none of them were found to be obese.

Normal picture of Waist to Hip Ratio for 49 female sports student was observed. Only one student was found to be overweight with the Waist to Hip Ratio of more than 0.8. (ICMR Standards

Clinical Assessment

Using a Joliffe's table of clinical assessment, the students were identified for clinical symptoms for both micro and macro nutrient.

Table III. Clinical symptoms of selected female sports students.

Organ	List of symptoms	No. of students (N=54)
Eye	Pale conjunctiva	27
	Inflammation of conjunctiva	3
Nail	Pale colour nail	12
Hair	Hair fall and Easily pluck able hair	48
	Brittle hairs	46
Skin	Dry and rough skin	10
Tongue	Magenta tongue	3

On clinical examination, 48 students showed problems of hair fall- a striking symptom for iron and protein deficiency. Forty one students showed symptom for B-complex deficiency with dry and rough dermatitis. Also three out of 54 students reported for magenta tongue a classical symptom of riboflavin and niacin deficiency.

Dietary Pattern

The dietary pattern of the selected female students like type of diet consumed, the frequency and the reasons for skipping meals and their meal pattern were elicited using a well structured interview schedule.

Weekly Menu

Forty three out of 54 female students selected for the study were from different parts of the state, and were residential

students; hence their dietary pattern was observed for a week.

Table IV. Weekly food consumption pattern

Day	Breakfast	Lunch	Tea	Dinner
 Sunday	Dosa, Sambar, Chutney, milk, banana	Rice Ladies finger poriyal, Sambar, Rasam, Butter milk	Tea, Avval uppuma	Curd rice, pickle
 Monday	Pongal, chutney, sambar, milk, banana	Rice, sambar, rasam, butter milk, Koottu	Tea, bonda	Veg. Biryani, Onion raita
 Tuesday	Rava uppuma, chutney, milk, banana	Rice, sambar, rasam, butter milk, cabbage porriyal	Tea, biscuit	Lemon rice, beetroot chutney
 Wednesday	Bread, Channa curry, milk, banana	Rice, beetroot porriyal, Kara kozhumbu, Appalam	Tea, puffs	Tamarind rice, pickle
 Thursday	Idly, Sambar, Chutney, Milk banana	Rice, potato, Puli kozhumbu, Butter milk, pickle	Tea, Sundal	Coconut rice, pickle, Appalam
 Friday	Sevai, Chutney, Milk, banana	Rice, Brinjal porriyal, sambar, rasam, butter milk	Tea, Coconut bun	Mint rice, Dhal chutney
 Saturday	Vermicelli uppuma, Chutney, Milk, Banana	Rice, Snake guard porriyal, sambar, butter milk, Rasam	Tea, Paruppu vadai	Tomato rice, Ash guard porriyal

On the whole the study indicated an intake of balanced meal by the selected sports students. The weekly menu included green leafy vegetable in the form of kootu. Fiber rich vegetable like ladies finger, brinjal, drumstick and raw plantain were given in the form of sambar. Nutritious vegetable like carrot, beans, green leafy vegetables and plantain stem were not included in the menu due to tedious pre-preparation task involved in cooking at a large scale. Though the hostel followed a weekly menu pattern, depending on the

seasonal availability of vegetables, mild alteration in the menu was made occasionally. Except banana, none of the other fruits were included in menu.

Dietary habits

Forty nine out of 54 female sport students were found to be non-vegetarians and three students were found to be ova-vegetarians. Out of 54 female sports students, 45 students had four meal a day followed by eight students who had three meal a day. Only one student took two meals a day. It was observed that 53

students had the habit of skipping their meals. Lack of time (24-students), poor and inadequate choice of menu (16 students) were reported as a strong reasons for skipping of meals.

Food Frequency

Using a pre tested food frequency table, the consumption pattern of various food groups was elicited from the selected female sports students.

Cereals

Since Rice was our staple food, it was consumed by all the subjects daily. The other fiber rich cereal like wheat and rice flakes was consumed by 43 out of 54 students once a week. It was also observed that more than 50 subjects consumed nutritious cereals like bajra, italian millet, and maize occasionally.

Pulses and legumes

Forty eight out of 54 female sports students consumed black gram dhal and red gram dhal daily in the form of sambar and koottu. The other pulses like green gram dhal, black channa, white channa and green peas were consumed once a week in the form of sundal and other gravy preparation by more than 45 students. It was also observed that none of the students consumed soya bean – a protein rich source and its products on any accounts.

Green leafy vegetables

The consumption of green leafy vegetables was found to be poor on the whole. Except for coriander leaves and curry leaves that were used for seasoning and flavoring purpose, none of the other green leafy vegetables were consumed daily. It is surprising to note that only four out of 54 subjects consumed amaranth and drumstick leaves a iron rich source once in a week in the form of poriyal and kootu.

Roots and tubers

Except for onion, ginger, and garlic, none of the roots and tubers was consumed daily. Potato and beet root were consumed

by 54 subjects once a week. Other roots and tubers like tapioca, yam, and colacasia were consumed by 45 students occasionally.

Other vegetables

All the 54 students, consumed either of drumstick, ladies finger, and plantain green in the form of sambar daily. Forty three out of 54 students consumed snake gourd and cabbage once a week. It was observed that none of the student consumed other vegetable like beans, plantain stem, bottle guourd, colacasia stem, cucumber, plantain stem and ridge guard.

Fruits

As part of the daily menu, one banana was provided everyday to the students. Therefore except banana, none of fruits like orange, papaya, guava and pomegranate that are rich in B-complex vitamin were consumed frequently. Seasonal fruits like watermelon, mango, and orange were consumed by subjects occasionally. Though lemon was not taken as fresh juices, 25 students consumed it daily in the form of pickle.

Milk and milk products

Out of 54 students, 28 students consumed 200-500 ml of milk per day and four students consumed more than 500 ml of milk. And the rest consumed less than 200 ml. of milk .Other milk products like curd and buttermilk was consumed daily by all the 54 subjects.

Fleshy foods

Though 49 out of 54 students were non-vegetarian, foods like meat, fish, egg, and chicken were consumed generally once a week or occasionally whenever they went home or visited their parents. Though egg was provided by the hostel mess on additional changes, only two students consumed it once a week.

Mean Nutrient Intake

A weightment survey for a sub sample of 30 students selected at random was done for three consecutive days. The

mean nutrient intake was calculated and compared with the RDA.

Table V. Mean nutrient intake of the selected sports students.

S.No.	Nutrients	RDA	Actual mean intake	't' value
1	Energy(kcal)	2060	1629.88 ± 243.31	3.51*
2	Protein(g)	63	70.51 ± 15.67	0.22 ^{ns}
3	Fat(g)	22	41.25 ± 16.83	1.21 ^{ns}
4	Carbohydrate(g)	300	274.62 ± 45.29	1.01 ^{ns}
5	Iron(mg)	30	11.87 ± 5.60	2.91*
6	Carotene(g)	2400	718.35 ± 93.63	3.49*
7	Thiamine(mg)	1.0	2.22 ± 0.58	0.02 ^{ns}
8	Riboflavin(mg)	1.2	2.49 ± 0.49	0.05 ^{ns}
9	Vitamin C(mg)	90	84.65 ± 11.86	1.06 ^{ns}
10	Sodium(mg)	2400	1220.51 ± 141.03	33.52*
11	Potassium(mg)	1700	1399.13 ± 105.35	1.39 ^{ns}
12	Calcium(mg)	1200	919.26 ± 152.47	1.31 ^{ns}
13	Phosphorus(mg)	700	1038.8 ± 126.32	2.25 ^{ns}

* - Significant at 5% (t<0.05) ns – Not significant

Analysis of mean nutrient intake of the female sport students revealed a deficit nutrient intake for energy, iron, carotene and sodium in comparison with the RDA, at 5 percent level of significance.

Knowledge and attitude of female sports students on A pre- game meal

The knowledge and attitude of the female sport students on the pre-game meals, its benefits on the performance level and the willingness to consume the same was obtained .

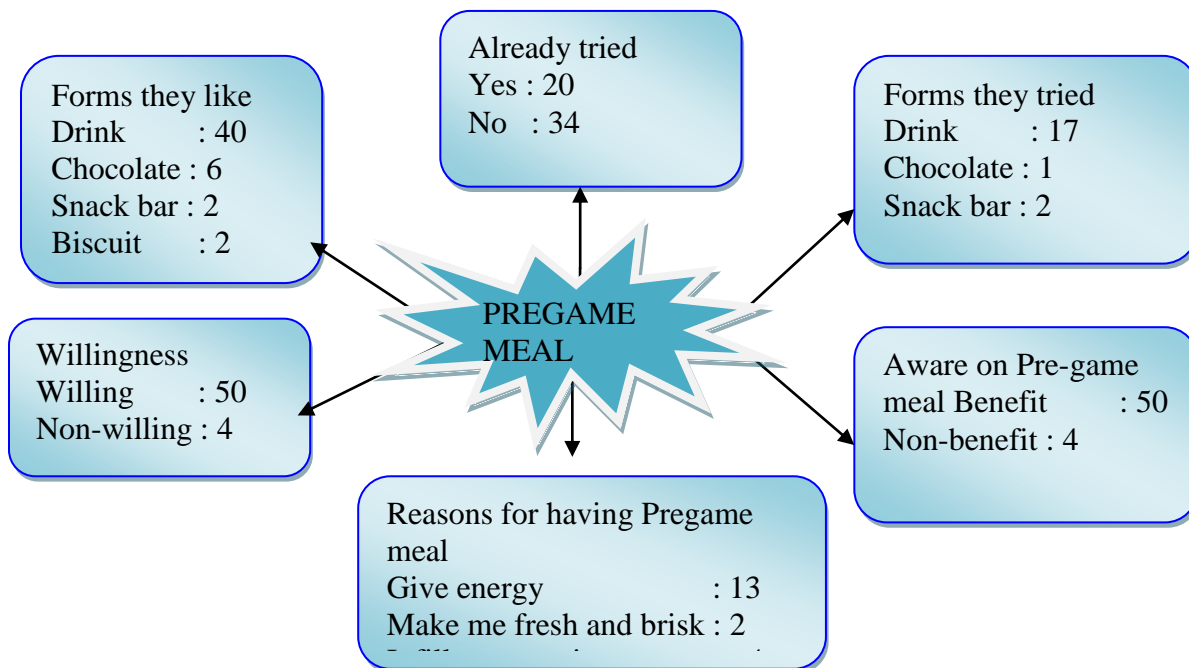


Figure-2. Knowledge and Attitude of Female Sports Students on the Pre -Game Meal

It was observed that 20 out of 54 female sports students have already tried a pre-game meal prior to their sports events. Out of 20 students 17 students have tried pregame meal in the form of drink and rest in the form of chocolates and snack bar. Also, 50 out of 54 students believed that a pre game meal will enhance their performance level and 23 opined that the intake of pre game meal will give strength and stamina to perform an event. On the whole 50 students showed their willingness to consume the pre game meal if administered. Majority of them like to have the pregame meal in the form of a drink (40) and only few subjects opted to have snack bar (2) and chocolates (6).

E. Development of pre game meal

After many trials, a pre-game meal based on the nutritional and functional properties with six ingredients namely banana powder, soya isolate, chocolate powder, cashew nut, green gram dhal and jaggery of varying proportion was prepared. The prepared variation was tested for its acceptability by a panel of 25 members against a five point rating scale. The composition of the most acceptable variation and the nutrition qualities is given below

Table- VI. Composition of the pre- game meal

S.No	Variation I	
1	Banana powder	10g
2	Soya isolate	7.5 g
3	Chocolate powder	7.5 g
4	Jaggery	25 g
5	Green gram dhal	10 g
6	Cashew nut	7.5 g

The investigator included two sources of pulses namely soya isolate and green gram dhal, to provide a protein dense meal apart from providing calories. Cashew nut, jaggery, chocolate and banana powder were incorporated to provide a quick source

of energy for easy absorption and utilization (Table VI). The above ingredients were mixed in 250ml of milk to enable the sport persons not only to meet out their energy requirement during an event but also to rehydrate themselves while they are playing and for a quick absorption.

Nutrient content of the pre-game meal

The prepared pre-game meal was analyzed for its nutrient content in a food laboratory. Nutrient contribution for both macro and micro nutrients using standard procedure for a portion of 250ml was determined.

Table –VII. Nutrient content of the pre-game meal

Parameters	Result
Energy (kcal)	375
Protein (g)	20
Fat (g)	12
Carbohydrates (g)	36.62
carotene (g)	150
Potassium (mg)	72.50
Moisture (g)	172.27
Sodium (mg)	140.50
Iron (mg)	8.10
Niacin (mg)	0.35
Riboflavin (mg)	30
Vitamin C (mg)	7.5
Thiamine (mg)	Traces
Fiber (g)	7.5
Calcium (mg)	1600

Nutrient content of 250ml of the pre-game meal, on the whole contributed 375kcal and 20gm of protein (Table-VII). The total fat content of the pre-game meal was found to be 12gm. Apart from providing a good source of energy and protein the pre-game meal also provided 8.10mg of iron and 1600mg of calcium. In spite of carbohydrate rich source like banana powder, chocolate powder and jaggery were included in pre-game meal, it offered only 36.6gm of carbohydrate.

F. Impact of pre game meal

The impact of the pre-game meal on the pre and post performance level of the female sport student was tested on a subsample of 10 female foot ball player. The player were administered with 250 ml of the pre-game meal two hour before the event for five consecutive day and the performance level of the female student was scored using standard tool developed for foot ball. The mean difference in the score between the pre and post performance level, after the administration of the pre game meal was statistically tested.

Foot Ball

The pre and post-performance level of the female sports student for football was assessed using Ball changing zig - zag test

Ball changing zig – zag test

In the ball changing zig – zag test, five cones were placed at a distance of 10 feet from the standing point, the student were asked to kick the football in zig – zag movement by passing the ball from right side of the first cone to the left side and so on till she complete the round by reaching the starting point. A trial of two was given for each player and the number of kicks completed in one minute was scored for each trial.

The pre and post-performance level for the zig – zag test on administration of the pre-game meal is presented in table VIII.

Table VIII. Pre and post score of football zig-zag test

S.No	Subjects	Repetition		Kicking		SD t' value
		Pre Mean	Post Mean	Pre Mean	Post Mean	
1	S1	1.83	2.25	1.83	1.67	R = Pre SD 0.176 Post SD 0.133 t = 9.50**
2	S2	1.67	2.65	1.83	2.00	
3	S3	1.83	2.50	1.83	1.83	
4	S4	2.00	2.70	1.50	1.50	
5	S5	1.83	2.45	2.00	1.83	
6	S6	1.83	2.50	2.25	2.65	K = Pre SD 4.35 Post SD=3.67 t = 8.61**
7	S7	1.50	2.55	2.50	2.70	
8	S8	1.50	2.40	2.45	2.50	
9	S9	2.00	2.65	2.55	2.40	
10	S10	1.83	2.55	2.65	2.55	

R = Repetition; K = Kicking; * - Significant at 1 (t<0.01)

The intake of the pre game meal before the foot ball event showed a significant difference their performance level .The pre and post test score of ball changing Zig –zag test tested for the kicking and repetition ability of the player was found to have improved significantly at 1% level of significance Thus the above findings clearly indicate the effectiveness of the pregame meal as a performance enhance

CONCLUSION

On the whole, the administration of the developed pre-game meal to the selected female sports students for the selected sports events namely the foot ball, showed a significant improvement in the performance level of the football player at one percent level of significance.

Thus to conclude the developed pre-game meal can be effectively used as

performance enhancer for not only group events like foot ball, they can also be recommended for other event like basket ball volley ball and other athletic sports events.

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