

Perception of Athletes about Diet and Its Role in Maintenance of Sports Performance

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Abstract

The focus of this research study was to assess the perception of athletes about diet and its role in the maintenance of performance. The target population of this research study was comprised of all the players of different sports clubs of District Bannu. Two hundred and six (206) players were randomly selected as sample of the study. For the collection of data, the researcher developed a closed form of questionnaire. The developed questionnaire personally served by the researcher among the respondents and collected back after getting it filled by the respondents. The collected data were tabulated and analyzed by using percentage and mean average as statistical tool. After data analysis, the researcher arrived at conclusion that proper diet is the basic requirement of athletic performance. The data also revealed that carbohydrates, protein, fats, vitamins, minerals and water are more important to consume in proper amount for sports participation.

Keywords: Athlete; Diet; Training; Sports performance

Introduction

Sports diet has been one of the basic needs of every sportsmen participating at various level of sports. Sports diet has the variety of benefits for maintenance and improvement of performance for an athlete. The performance of sportsmen is decreasing day by day. There may be many reasons behind this decreasing standard. Diet is one of the basic requirements for sportsmen. How much diet is necessary for athlete and is sufficient diet is provided to athlete before, during and after the competition? For the purpose to discover the fact that the researcher, intend to conduct a research study under the title "Diet and Sports Performance".

Diet and Sports Performance

According to Hoch et al. [1], the term diet refers to the collection of such type of food which helps to improve the physical condition, controls weight and helps to cure diseases by making the immune system strong. Similarly, Khan [2] defines the sports diet as the diet, which need by athlete before, during and after the activity.

Every athlete need to use proper diet before, during and after the activity. Lacking of proper diet not only adversely affects the performance of athlete but it significantly affects the overall functional capacity of the body of athlete [2].

Sports diet has been one of the basic needs of every sportsmen participating at various level of sports. According to Hoch et al. [1], sports diet enhances athletic performance by decreasing fatigue and the risk of disease and injury; it also enables athletes to optimize training and recover faster. Athletes must fuel their bodies with the appropriate nutritional foods to meet their individual energy requirements in competition, training and recovery. If these nutritional needs are not met, there is an increased risk of poor performance and health issues.

Sports diet is a strong and valuable tool for promoting the athletic performance. It is an energy source for our body, which gives us to "get up and go." Without sports diet an athlete, remain unable to show and to maintain performance during the competition. For the maintenance of performance a player need to used different nutrients such as carbohydrates, protein, and fats etc. [3].

Sports diet must be consist of food nutrients, which are more

beneficial such as according to Litte. Carbohydrates should be the largest percentage of an athlete calorie intake, at least 50% to 60% in his food. This helps to meet with the demands of energy needed during exercise, maintain blood glucose and refill muscle glycogen stores.

According to Lemon [4], protein is required for the hormone and enzyme production, nutrient transfer in the blood, connective tissue support, and the repair of tissue in response to periods of exercise. They should consume 10-15% of total calories from protein. Similarly Cotugna et al. [5] stated that Fats intake is important for the energy production, protecting organs, providing insulation to the body, and facilitating fat-soluble vitamin uptake and essential fatty acid intake.

Food components may be classified as macronutrients and micronutrients. It is necessary for athlete to use both macronutrients and micronutrients. Lacking of both macronutrients and micronutrients may cause the poor or week performance of athlete during the competition [2]. Macronutrients are essential for players in energy production, bone health, immune function and antioxidant activity. Micronutrient itself does not provide energy but helps to maintain the functional capacity of the body of athlete [6].

Diet refers to the collection of such type of food, which helps to improve the physical condition, controls weight and helps to cure diseases by making the immune system strong [1]. Use of diet directly linked with physical structure and intensity of the activities which is to be performed because some activities are high powered in nature such as football, tennis, and hockey, requiring large amounts of work, rapid movements, and more energy while others are more endurance-based, such as cross-country running and triathlon training, which require

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continual lower force outputs for longer durations. Diet may be given to athlete according to the nature and type of activity. Many athletes loss performance due to improper use of diet [7].

Research Study conducted by Frank et al. [7] shown that athlete needs to use diet according to the physiological demands of his or her sport. Such as

1. Muscles which produce high tension need more protein for recovery.
2. Muscles which involve in the activity of high volumes and intensity need more carbohydrates to refill glycogen (sugar) stores.
3. Additionally, active bodies that produce large amounts of heat need more water to regulate the body temperature during the practice or competitive event.

According to Boyle [8] and Swinburn and Ravussin [9], it is necessary for a coach to identify the actual demands of sports along with the added challenges of practice and training. It is important for athlete to understand the differences in required diet for health, fitness, and athletic performance. The author further stated that food, which selected should serve to prevent nutrient deficiencies or excesses that may decrease the risk of developing health-related problems or diseases. In moderate physical activity, a healthy diet should prevent weight gain, help to maintain appropriate body composition, and prevent any adverse health issues.

The primary need for the diet of the athlete is to meet the additional nutrient requirement imposed by the training load. Different kinds of physical activities demand different levels of energy. To fulfill the nutritional need of body before, during, and after the activity or training program it is needed to know the recommended intake of nutrition [10,11].

Guidelines for taking food nutrients for performing different physical activities

According to Khan [2], it is necessary for athlete to give proper concentration to the following points as guidelines for taking food nutrients for performing different physical activities:

- Proper or adequate amount of diet helps in maintaining of health and performance. Therefore, it should be taken according to the need of the body.
- High amount of Carbohydrates should be taken for maintaining of energy level before, during and after the activity.
- After the activity, proper concentration should be given to the right intake of major nutrients for maintenance of performance.

Recommended nutrients for short, moderate and long duration sports events

It is shown by studies conducted by Boyle [8], Swinburn and Ravussin [9] and Khan [2] shown that dietary need of athlete vary from activity to activity. The following few tables shown the dietary need of athlete during, before and after the activity (Charts 1-3).

Chart 1: Recommended nutrients for short duration events players.

Nutrients	Percentage (%)
Carbohydrates	60
Proteins	15-25
Fats	15-25

Chart 2: Recommended nutrients for moderate duration events players.

Nutrients	Percentage (%)
Carbohydrates	55-60
Proteins	15-25
Fats	15-20

Chart 3: Recommended nutrients for long duration events players.

Nutrients	Percentage (%)
Carbohydrates	60-70
Proteins	10-15
Fats	20-30

Pre-Training Diet, During Training Diet and Diet after Training

Sports diet is provided in three main areas:

- Pre-training diet;
- During training diet;
- Diet after training.

Pre-training diet

The diet which is required for an athlete before participating in any kind of training program is known as pre-training diet. Pre-event diet provides energy and strength needed to finish strong. Pre-event or training diet should be high in carbohydrate, adequate in protein, and moderate in fat and fiber. A larger food should be consumed 3-4 h prior to exercise to build and maintain energy stores, while a small snack 30-60 min before exercise will provide a last minute boost of energy to the body. Hargreaves [12] of the view that consumption of a high carbohydrates diet 3-7 days before the competition may be more appropriate which may contains:

- Carbohydrates 70-80%;
- Protein 10%;
- Fats 10-20%.

Diet during training

The diet which utilized by an athlete during sports performance is called during competition diet. Sport activities that extend over a long period may require mid-activity refueling in order to enhance performance. Easily digestible, carbohydrate rich foods can help maintain sufficient energy levels throughout the duration of exercise. According to Bonci L, that Carbohydrate is needed to provide energy during exercise. It is a fact that carbohydrates are stored mostly in the muscles and liver. And during activities the store carbohydrates are utilized for the production of energy for sports performance.

During sports performance full meal cannot be consumed. However, a small, high-carbohydrate snack will need to be consumed along with adequate fluid intake from sports drinks and water. Generally, in these situations the athlete would not want to consume more than about 300 calories. The main focus is to keep the athlete hydrated and not feeling hungry, yet still leave the gastrointestinal tract empty when competition begins.

Post-event diet or diet after training

The diets, which need by athlete after performing sports activities, are known as post competition diets. Post events or training diet

needed by the body to recover the body from fatigue and to adopt the load of activities. Refilling the body's energy and nutrient stores is needed immediately after high-intensity physical activity. Post-event diet should provide carbohydrate in order to restore energy losses from exercising and also protein to assist in energy restoration, in addition to muscle tissue repair and development. Fluid and electrolytes (sodium and potassium) lost in sweat should also be restored.

Methods and Materials

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises of the theoretical analysis of the body of methods and principles associated with a branch of knowledge [13]. The researcher adopted the following procedures for the purpose to collect the required data, to analyze the collected data and to draw the conclusion.

Population of the study

According to Kothari [11], "A research population is generally a large collection of individuals or objects that is the main focus of a scientific query". The population of this study was comprised of all the players participated in different sports clubs at different level of sports activities in the locality of District Bannu Kp Pakistan.

Sample and sampling size

"Sample size is an important feature of any experiential study in which the goal is to make inferences about a population from a sample. In practice, the sample size used in a study is determined based on the expense of data collection and the need to have sufficient statistical power" [14]. There are total 72 sports clubs in District Bannu KP Pakistan and the total one thousand and twenty eight (1028) players are registered in these sports clubs. It is very difficult to contact each and every player of the population. So the researcher confined his population and taken randomly two hundred and six players by twenty percent (20%) of total population. The below chart shows the detail of sample and sample size (Chart 4).

S. No.	Game/Event	Total club	Total players
	Football	19	304
	Cricket	22	352
	Hockey	8	128
	Basketball	4	40
	Volley Ball	16	192
	Table Tennis	3	12
Total		72	1028

Data collection tool

For the collection of the required data, the researcher developed structured and pre-tested Diet and Sports Performance Scale (DSPS) of three-options i.e., agree, Undecided and Disagree. The code and weight of each option.

S. No.	Option	Code	Weight
1	Agree	A	1
2	Undecided	UN	2
3	Disagree	DA	3

Before using of the developed Scale for the collection of data, the develop Scale was made reliable and valid such as:

Validity of the instrument: A 20 items likert type scale was developed to evaluate the perception of athletes about diet and its role in sports performance. In developing the instrument and to make it valid

numerous methods were used. For construct validity (construct validity evaluates the degree to which the scores from the scale link to other methods of theoretical characters [2] and content validity (includes assessments of the degree to which the content of a scale relates to what it is intended to measure [2]. A variety of previous scales Burke [10], Hoch et al. [1], Boyle [8], Swinburn and Ravussin [9] was used.

Reliability of the instrument: Instruments are believed to be reliable when they are producing similar results each time when they are used [2]. The author further elaborates that instrument's reliability is determined with one or more generally accepted procedures. In estimating the internal consistency reliability, the scale was administered to 20 experts in the field of sports sciences, physical education, and education. The responses of the experts were gathered and calculated the inter item correlation on items, and the co-efficient alpha on the whole scale. The Cronback alpha of the scale was measured as 0.87 which is highly reliable.

Mode for data collection

The developed scale was personally distributed by the researcher among the selected population and collected back after getting it filled by the respondents.

Presentation and Analysis of Data

Data collected from the respondents were analyzed by using percentage and mean average as statistical tool. The analysis is shown in Tables 1-4.

H₀1: There is no significant provision of diet before competition as perceived by athletes

Table 1 shows that there is significant provision of diet before competition as perceived by players because 71.92% players are agree, 8.94% are undecided and the percentage of disagree is 19.13 (71.92>8.94 and 19.13). While null hypothesis stating that there is no significant provision of diet before competition as perceived by the players. So hypothesis no. 1 is rejected.

H₀2: There is no significant provision of diet during competition as perceived by athletes

Table 2 shows that there is significant provision of diet during competition as perceived by players because 79.5% are agree and undecided are 4.5% and percentage of disagree is 16 (79.5>4.5 and 16). While null hypothesis stating that there is no significant provision of diet during competition as perceived by the players. So hypothesis no. 2 is rejected.

H₀3: There is no significant provision of diet after competition as perceived by athletes

Table 3 shows that there is significant provision of diet after competition as perceived by players because the percentage of agree is 77.2 and undecided are 6.5% and disagree are 16.3% (77.2>6.5 and 16.3) While null hypothesis stating that there is no significant provision of diet after competition as perceived by the players. So hypothesis no. 3 is hereby rejected.

H₀4: There is no significant diet provided during training as perceived by the players

Table 4 shows that there is significant diet provided during training as perceived by players because the mean of agree is 76.2 and undecided

S. No.	Diet provided pre-competition	Agree	%	Undecided	%	Disagree	%
1.	Do you aware about the importance of pre-competition diet	102	78.46	08	6.15	20	15.38
2	Food consists of all required nutrients for sports are provided pre-competition. Do you agree?	82	63.07	28	21.53	20	15.38
3	Do you agree that sufficient amount of diet is provided before competition?	50	38.46	05	3.84	75	57.69
4	Carbohydrates are an important food nutrient to be taken before competition	112	86.15	13	10	05	3.84
5	Proper carbohydrates are provided for athlete before competition	110	84.61	12	9.23	08	6.15
6	Protein is essential for heavy training session	90	69.23	15	11.53	25	19.23
7	Protein is provided before sports competition	107	82.30	07	5.38	16	12.30
8	Fatty acid is provided in food for the maintenance of endurance performance	95	73.07	05	3.84	30	23.07
Percentage (Total)		748	71.92	93	8.94	199	19.13

Table 1: Showing the provision of diet before competition.

S. No.	Diet provided during competition	Agree	%	Undecided	%	Disagree	%
1	Easily digestible form of energy is important during sports competition	116	89.2	7	5.4	7	5.4
2	Carbohydrate is the basic food nutrient provided during sports competition	92	70.8	3	2.3	35	26.9
3	Carbohydrates like juice, sugarcane are provided during competition	122	93.8	0	0.0	8	6.2
4	Glucose is providing to an athlete during competition	85	65.4	5	3.8	40	30.8
5	Food consist of fluids with suitable nutrients is provide during participation	115	88.5	2	1.5	13	10.0
6	Proper amount of vitamins and glucose are provided during competition to an athlete	90	69.2	18	13.8	22	16.9
Percentage (Total)		620	79.5	35	4.5	125	16

Table 2: Showing the provision of diet during competition.

S. No.	Diet provided after competition	Agree	%	Undecided	%	Disagree	%
1	The use of high amount of carbohydrate is important for an athlete after competition	103	79.2	7	5.4	20	15.4
2	Carbohydrates are provided to athlete after competition	105	80.8	8	6.2	17	13.1
3	Vitamins and minerals are provided after sports competition	95	73.1	10	7.7	25	19.2
4	Refilling of athlete body's energy is the major function of post-competition diet	105	80.8	5	3.8	20	15.4
5	Protein is also an important part of post competition diet	112	86.2	3	2.3	15	11.5
6	Diet is provided in sufficient amount to athlete after competition	82	63.1	18	13.8	30	23.1
Percentage (Total)		602	77.2	51	6.5	127	16.3

Table 3: Showing the provision of diet after competition.

S. No.	Variables	Agree %	Undecided %	Disagree %
1.	Diet provided before competition	71.92%	8.94%	19.13%
2.	Diet provided during competition	79.5%	4.5%	16%
3.	Diet provided after competition	77.2%	6.5%	16.3%
Mean (Total)		76.2	4.75	17.14

Table 4: Showing the mean average of perception of players regarding the provision of diet before, during and after the competition.

is 4.75 and mean of disagree is 17.14 ($76.2 > 4.75$ and 17.14) while null hypothesis stating that there is no significant diet provided during training as perceived by the players. So hypothesis no. 4 is hereby rejected.

Finding and Discussion

Majority of respondents opined that proper diet is given to players before the activity. The study conducted by Clark et al. [14] supported the findings of the present study because they concluded that sufficient intake of diet before the activity is necessary for the maintenance of performance of athlete. The findings of the study conducted by Maughan et al. [15] also inline of the present study. According to the

findings of that study good performance need good diet to use before the competition.

It is find out by the present research study that proper diet is given to player during the activity. Finding of the study conducted by Casey and Greenhaff [16] illustrated that preservation of athletic performance is totally depend upon the diet given during the activity. The study conducted Iglesias-Gutiérrez et al. [17], shows that such type of diet is given to athlete during the competition, which provide easily digestible form of energy.

It is perceived by the researcher that that proper diet is given to players after the activity. This finding is inline of the studies conducted by Dunford [18], Storlie [19]. According to their research study it is

necessary to provide adequate relaxation and diet to player after activity which helps them to recover the lost energy.

Conclusion

On the basis of finding, the researcher concluded that significant diet is provided to athletes during training. The data revealed that carbohydrates, protein, fats, vitamins, minerals and water are more important to consume in proper amount for sports participation.

In addition, the researcher found that food consists of sufficient amount of energy with carbohydrates, fats, protein and other micronutrients are provided before, during and after competition to athletes.

References

1. Hoch AZ, Goossen K, Kretschmer T (2008) Nutritional requirements of the child and teenage athlete. *Phys Med Rehabil Clin N Am* 19: 373-398.
2. Khan (2014) *Concept of Sports Training and Coaching*. LAP Germany.
3. Coyle EF (1995) Substrate utilization during exercise in active people. *Am J Clin Nutr* 61: 968-979.
4. Lemon PWR (1998) Effects of exercise on dietary protein requirements.
5. Cotugna N, Vickery CE, McBee S (2005) Sports nutrition of young athletes Scarborough. *J Sch Nurs* 21: 323.
6. Maughan R, King D, Lea T (2004) Dietary supplements. *J Sports Sci* 22: 95-113.
7. Frank L, Engelke P, Schmid T (2003) Health and community design: The impact of the built environment on physical activity.
8. Boyle M (2016) *New Functional Training for Sports*. Human Kinetics.
9. Swinburn B, Ravussin E (2008) Energy balance or fat balance? *Am J Clin Nutr* 57: 766-771.
10. Burke L (2007) *Practical sports nutrition*. Human Kinetics.
11. Kothari CR (2004) *Research methodology: Methods and techniques*. New Age International. Review: Research and Recommendations. *Int J Soc Sports Nutr*.
12. Hargreaves M (1999) Metabolic responses to carbohydrate ingestion: effects on exercise performance. In *Perspectives in Exercise Science and Sports Medicine*.
13. Lenth RV (2001) Some practical guidelines for effective sample size determination. *The American Statistician* 55: 187-193.
14. Clark M, Reed DB, Crouse SF, Armstrong RB (2003) Pre-and post-season dietary intake, body composition and performance indices of NCAA division I female soccer players. *Int J Sport Nutr Exerc Metab* 13: 303-319.
15. Maughan RJ, Depiesse F, Geyer H (2007) The use of dietary supplements by athletes. *J Sports Sci* 25: 103-113.
16. Casey A, Greenhaff PL (2000) Does dietary creatine supplementation play a role in skeletal muscle metabolism and performance? *Am J Clin Nutr* 72: 607-617.
17. Iglesias-Gutiérrez E, García-Rovés PM, Rodríguez C, Braga S, García-Zapico P, et al. (2005) Food habits and nutritional status assessment of adolescent soccer players. A necessary and accurate approach. *Can J Appl Physiol* 30: 18-32.
18. Dunford M (2006) *Sports nutrition: A practice manual for professionals*. Am Diet Assoc.
19. Storlie J (1991) Nutrition Assessment of Athletes: A Mode for Integrating Nutrition and Physical Performance Indicators. *Int J Sport Nutr* 1: 192-204.