



Nutritional pattern of aerobic and anaerobic capacity male players of inter university level

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Abstract

Sports are as old as human society itself. It involves vigorous physical exertion and the use of relatively, complex physical skills by individuals. Participation in sports activities is increasing at very high rate. Innumerable factors such as physical, physiological and nutrition patterns influence the performance of a player. The main objective of the study was to find the difference in nutritional patterns of aerobic capacity players. The study was conducted on total 305 male players including aerobic and anaerobic games. Only male players ranging age between 18-25 years who were taking part in all India Interuniversity level were investigated. The subjects were selected from the state covering Punjab, Haryana, Himachal Pradesh and two Union Territories Delhi and Chandigarh. The evaluation of intake the energy as quantified by food intake was carried out by recall method. Three weeks food record was obtained and average value was used for interpretation. Results revealed that there was significant difference in proteins, carbohydrates, fats, and calories between aerobic and anaerobic groups.

Keywords: sports, nutrition pattern, aerobic, anaerobic, players

Introduction

Nutrition can help enhance athletic performance. An active lifestyle and exercise routine, along with eating well, is the best way to stay healthy. Eating a good diet can help provide the energy you need to finish a race, or just enjoy a casual sport or activity. You are more likely to be tired and perform poorly during sports when you do not get enough ^[1]. Food is the necessity of life. The food we eat is digested and assimilated in the body and used for its maintenance and growth. Nutrition of athletes men like that of every other person is aimed mainly to provide adequate quantity of energy and essential nutrients, with increasing awareness in the competitive sports and physical fitness in the world over the target of each nation is to get higher level of performance. The sports scientist is now doing their best to reach the core of this objective. The nutritional status of sports men may differ widely with respect to the ideal pattern of a healthy and adequate nourished individual because of number of factors related to the sports ^[2]. Nutritional requirements are not same at various periods of growth. Requirements vary widely with age, sex, body size, growth pattern, climate and state of health of person ^[3].

A good foundation diet will provide sufficient nutrients and energy to improve adaptations from training, support optimal recovery and keep away from excessive food-related tension. Heavy training increases the require for nutrients, chiefly carbohydrate, protein and micronutrients vitamins and minerals ^[4]. Physical capacity of athletes is an important element of success in sports achievements. Aerobic capacity has been accepted as its major component. Maximal oxygen uptake has been regarded by majority of authors as the best

indicator of aerobic capacity of an organism, and at the same time, the best indicator of an athlete's physical capacity ^[5]. Sports nutrition is the study and practice of nutrition and diet as it relates to athletic performance. It is concerned with the type and quantity of fluid and food taken by an athlete, and deals with nutrients such as vitamins, minerals, supplements and organic substances such as carbohydrates, proteins and fats. Although an important part of many sports training regimens, it is most commonly considered in strength sports (such as weight lifting and bodybuilding) and endurance sports (for example cycling, running, swimming) ^[6]. Various studies have been conducted on dietary habits of sports persons but there is scarcity of research on comprehend differences between players of aerobic and anaerobic games. Thus the main aim of present study was to find out the nutritional patterns of aerobic and anaerobic capacity players. it was also to focus whether there is difference significant difference in nutritional patterns between aerobic capacity players.

Methodology

The study was conducted on total 305 male players including aerobic players of handball, football, basketball, cycling and male anaerobic players of weightlifting, wrestling, swimming and 100mts. running only. The players under investigation were consist of those who were taking part in all India Interuniversity level. The subjects were selected from the state covering Punjab, Haryana, Himachal Pradesh and two Union Territories Delhi and Chandigarh. The study was conducted only on male players ranging age between 18-25 years. Everything eaten and consumed by the subjects along with

specific amount were recorded. The evaluation of intake the energy as quantified by food intake was carried out by recall method. Three weeks food record was obtained and average value was used for interpretation. To find out the total caloric value of all the food eaten and composition of food items in terms of grams of Proteins, Carbohydrates, Fat and total calorie burnt was consulted from the following books:-

1. Essentials of food and nutrition [7].
2. Nutrition, Exercise and weight Reduction [8].

Statistical Procedure

Data was analyzed by applying t-test to examine the significance of mean difference, if any between nutrition pattern of aerobic and anaerobic capacity players of inter university level. Analysis of variance (ANOVA) was computed to find out the cross sectional differences among aerobic capacity game players and anaerobic capacity game players and as F-values were found to be significant at 0.05 levels. Computational work of analysis was carried out through SPSS version 17 windows software

Limitations

Since the subjects were belonging to a cross section of society representing various socio-economic, dietary habits and cultural background beside heredity. Thus, these factors might influence the data and hence considered as limitations of the study.

Results

Descriptive statistics for proteins, carbohydrates, fats, and total calories between aerobic and anaerobic groups is presented in table 1. Proteins mean value of aerobic was 271.69 gm and anaerobic group possessed 283.27 gm. The mean value of carbohydrates of aerobic group was 758.31gm whereas anaerobic showed 686.46 gm. The mean value of fats aerobic group was 236.81 gm whereas anaerobic showed 224.38 gm. The total calories mean value of aerobic group was 6504.54 kcal whereas anaerobic showed considerable value i.e. 6121.61 kcal. As it is evident from the p- values, there was significant difference in proteins, carbohydrates, fats, and calories between aerobic and anaerobic groups.

Table 1: T-test comparison between various diet constituents between aerobic and anaerobic groups.

Variable	Aerobic		Anaerobic		t-test	Sig.
	Mean	Sd	Mean	Sd		
Proteins (gm)	271.69	24.31	283.27	32.12	-3.501	.001*
Carbohydrates (gm)	758.31	31.02	686.46	44.70	16.335	.000*
Fats (gm)	236.81	40.80	224.38	48.01	2.354	.019*
Total Calories	6504.54	383.14	6121.61	507.04	7.342	.000*

* Significant at 0.05 level of significance

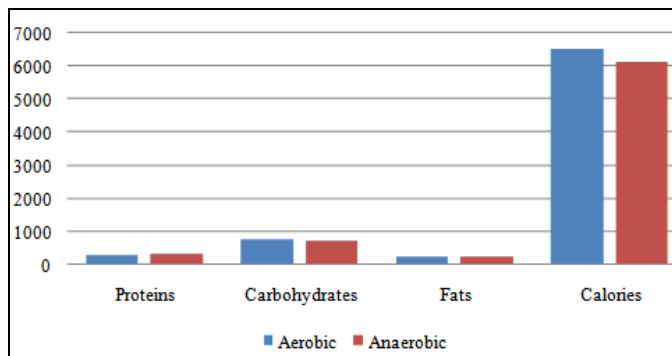


Fig 1: Fig 1 Representation for Proteins, Carbohydrates, Fats, and total Calories between aerobic and anaerobic groups

Descriptive statistics for proteins, carbohydrates, fats, and calories of handball, football, cycling and basketball players is

presented in table 2. It was noticed that players of cycling possessed maximum intake of proteins 305.20 gm followed by football players 277.00 gm, handball players 263.92 gm and basketball players 260.20 gm respectively. Results depicted that players of cycling possessed maximum intake of carbohydrates 782.32 gm and it was followed by football players 757.78 gm, handball players 753.63 gm and basketball players 753.52 gm. The players of basketball possessed maximum intake of fats 266.93 gm followed by cycling players 235.36 gm, handball players 234.70 gm and football players 209.40 gm respectively. The players of cycling possessed maximum intake of calories 6732.92 kcal followed by basketball players 6713.08 kcal, handball players 6432.80 kcal and football players 6272.57 kcal respectively. ANOVA revealed significant differences in proteins, carbohydrates, fats, and calories among mean values of handball, football, cycling and basketball players.

Table 2: Descriptive Statistics and ANOVA for Proteins, Carbohydrates, Fats and total Calories among handball, football, cycling and basketball players.

Variable	Handball (n=60)		Football (n=60)		Cycling (n=25)		Basketball (n=60)		f-ratio	Sig.
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd		
Proteins	263.92	20.84	277.00	15.56	305.20	25.83	260.20	19.87	34.94	0.00*
Carbohydrates	753.63	21.76	757.78	17.24	782.32	30.56	753.52	43.44	6.40	0.00*
Fats	234.70	33.37	209.40	38.46	235.36	33.77	266.93	31.71	27.91	0.00*
Total Calories	6432.80	330.00	6272.57	384.52	6732.92	287.04	6713.08	301.69	22.19	0.00*

* Significant at 0.05 level of significance

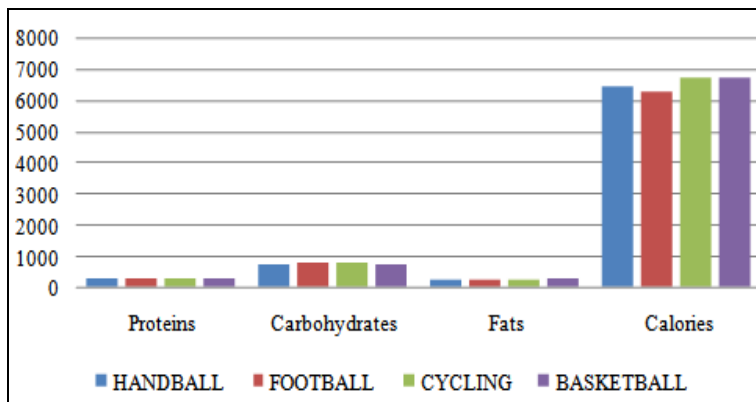


Fig 2: Fig 2 Representation and Anova for Proteins, Carbohydrates, Fats and total Calories among handball, football, cycling and basketball players

Table 3. Shows comparison of proteins, carbohydrates, fats, and calories between football and handball, football and cycling, football and basketball, handball and cycling, handball and basketball and cycling and basketball players. It was observed that mean values of proteins showed significant difference between football and handball, football and cycling, football and basketball, handball and cycling, cycling and basketball. Whereas carbohydrates showed a significant

difference between football and cycling, handball and cycling, handball and basketball. Fats showed significant difference between football and handball, football and cycling, football and basketball, handball and basketball, cycling and basketball. Calories showed significant difference between football and cycling, football and basketball, handball and cycling, handball and basketball

Table 3: POST HOC Comparison of adjustment Means of handball, football, cycling and basketball players in relation to Proteins, Carbohydrates, Fats, and total Calories.

Variable	Football Vs Handball	Football Vs Cycling	Football Vs Basketball	Handball Vs Cycling	Handball Vs Basketball	Cycling Vs Basketball
Proteins	-13.08333*	28.20000*	16.80000*	-41.28333*	3.72	45.00000*
Carbohydrates	-4.15	24.53667*	4.27	-28.68667*	0.12	28.80333*
Fats	28.80333*	25.96000*	57.53333*	-0.66	-32.23333*	-31.57333*
Total Calories	160.23	460.35333*	440.51667*	-300.12000*	-280.28333*	19.84

* Significant at 0.05 level of significance

Descriptive statistics for proteins, carbohydrates, fats, and calories of weight lifting, wrestling, swimming, and 100m sprinters is presented in table 4. It was noticed that players of 100m possessed maximum intake of proteins 305.32 gm followed by weight lifting players 281.84 gm, swimming players 275.16 gm and wrestling players 270.76 gm respectively. Results depicted that players of wrestling possessed maximum intake of carbohydrates 708.84 gm and it was followed by swimming players 693.12 gm, 100m sprinters 679.36 gm and weight lifting players 664.52 gm. The

players of wrestling possessed maximum intake of fats 266.00 gm followed by 100m sprinters 231.88 gm, weight lifting players 200.08 gm and swimming players 199.56 gm respectively. The players of wrestling possessed maximum intake of calories 6507.60 kcal followed by 100m sprinters 6268.88 kcal, swimming players 5902.84 kcal and weight lifting players 5807.12 kcal respectively. ANOVA revealed significant differences in proteins, carbohydrates, fats, and calories among mean values of weight lifting, wrestling, swimming, and 100m sprinters.

Table 4: Descriptive Statistics and ANOVA for Proteins, Carbohydrates, Fats, and total Calories among weight lifting, wrestling, swimming, and 100m sprinters.

Variable	Weight Lifting (n=25)		Wrestling (n=25)		Swimming (n=25)		100m (n=25)		f-ratio	Sig.
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd		
Proteins (gm)	281.84	31.21	270.76	23.97	275.16	22.26	305.32	38.35	6.74	0.00*
Carbohydrate (gm)	664.52	40.71	708.84	36.26	693.12	53.00	679.36	36.58	5.04	0.00*
Fats (gm)	200.08	23.32	266.00	61.17	199.56	26.62	231.88	37.32	15.63	0.00*
Calories	5807.12	293.75	6507.60	573.85	5902.84	337.92	6268.88	447.24	14.50	0.00*

* Significant at 0.05 level of significance

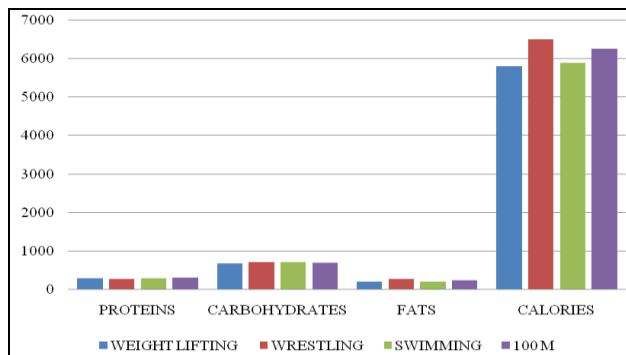


Fig 3: Fig 3 Representation and Anova for Proteins, Carbohydrates, Fats and total Calories among weight lifting, wrestling, swimming, and 100 m sprinters

Table 5: POST HOC Comparison of adjustment MEANS of weight lifting, wrestling, swimming and 100m sprinters in relation to Proteins, Carbohydrates, Fats, and total Calories.

Variable	Weight Lif. Vs Wrestling	Weight Lif. Vs Swimming	Weight Lif. Vs 100m	Wrestling Vs Swimming	Wrestling Vs 100m	Swimming Vs 100m
Proteins	11.08	6.68	-23.48	-4.40	-34.5600*	-30.1600*
Carbohydrates	-44.3200*	-28.60	-14.84	15.72	29.48	13.76
Fats	-65.9200*	0.52	-31.80	66.4400*	34.1200*	-32.3200*
Calories	-700.4800*	-95.72	-461.7600*	604.76000*	238.72	-366.0400*

* Significant at 0.05 level of significance

Discussion

The Nutrition of players is as important as designing of their training schedule and the selection of the methodology for imparting sports skills. The nutritional requirements of players are more than non-players in all respect. Since player have to maintain fitness to enable them to be ready for action [9]. The nutrients the proteins, carbohydrates, fats, vitamins, minerals, and water--are teammates that work together to provide good nutrition [10]. Physical fitness has been considered as one of the most important aspects of human existence. It is the basis of dynamic and creative intellectual activities. The relationship of body and the activities of the mind is subtle and complex. Nutrition is an important component of good health and of sporting performance. Inadequate nutrition adversely effects players’ performance. Nutritional status plays an important role in the energy requirements of different level of competition and also guarantees a good physical performance. The key to balancing your diet is to combine different foods so that nutrient deficiencies in some foods are made up by nutrient surpluses in others. Eating a variety of foods is the secret. Success in sports depends on three factors – genetic endowments, the state of training and nutrition. Genetic make-up cannot be changed. Specialized exercise training is the major means to improve athletic performance and proper nutrition is an important component of the total training program [11]. Exercising, by learning the way the body utilizes these materials and how these practices complement future diet and exercise of the individual [12]. The key is to get a variety of food, to get all the macronutrients, vitamins, and minerals. Eating foods that are natural means the athlete is getting the most nutritional value out of the food. When foods are processed it normally means that nutritional value is reduced [13].

Table 5 shows comparison of proteins, carbohydrates, fats, and calories between weight lifting, wrestling, swimming and 100m sprinters. It was observed that mean values of proteins showed significant difference between wrestling and 100m. Whereas carbohydrates showed a significant difference between weight lifting and wrestling. Fats showed significant difference between weight lifting and wrestling, wrestling and swimming, wrestling and 100m, swimming and 100m. Calories showed significant difference between weight lifting and wrestling, weight lifting and 100m, wrestling and swimming, swimming and 100m.

There was significant difference in proteins, carbohydrates, fats, and calories between aerobic and anaerobic groups. The results in nutrition category shows that players of cycling possessed maximum intake of proteins followed by football players, handball players and basketball players respectively. Results depicted that players of cycling possessed maximum intake of carbohydrates and it was followed by football players, handball players and basketball players. The players of basketball possessed maximum intake of fats 266.93 followed by cycling players, handball players 234.70 gm and football players respectively. The players of cycling possessed maximum intake of calories followed by basketball players, handball players and football players respectively. ANOVA revealed significant differences in proteins, carbohydrates, fats, and calories among mean values of handball, football, cycling and basketball players. The athletes of 100m possessed maximum intake of proteins followed by weight lifting player, swimming players and wrestling players respectively. Results depicted that players of wrestling possessed maximum intake of carbohydrates and it was followed by swimming players, 100m sprinters and weight lifting players. The players of wrestling possessed maximum intake of fats followed by 100m sprinters, weight lifting players and swimming players respectively. The players of wrestling possessed maximum intake of calories followed by 100m sprinters, swimming players and weight lifting players respectively. ANOVA revealed significant differences in proteins, carbohydrates, fats, and calories among mean values of weight lifting, wrestling, swimming, and 100m sprinters. The mean values of proteins showed significant difference between football and handball, football and cycling, football and basketball, handball and cycling, cycling and basketball. Whereas carbohydrates showed a significant difference

between football and cycling, handball and cycling, handball and basketball. Fats showed significant difference between football and handball, football and cycling, football and basketball, handball and basketball, cycling and basketball. Calories showed significant difference between football and cycling, football and basketball, handball and cycling, handball and basketball. Mean values of weight showed significant difference between wrestling and swimming, wrestling and 100m sprinters. Whereas height showed a significant difference between weight lifting and 100m, wrestling and swimming, swimming and 100m sprinters. Thus significant difference in nutritional patterns of aerobic capacity players was found. Moreover there was significant difference in proteins, carbohydrates, fats, and calories between aerobic and anaerobic groups.

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