



Research Article

BODY MASS INDEX OF ENDURANCE ATHLETES OF THE BULACAN STATE UNIVERSITY: BASIS FOR A SPORTS AND NUTRITION PROGRAM

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ABSTRACT

The purpose of this study is to determine the body mass index and problems encountered of selected endurance athletes of Bulacan State University during training and event proper that will be a basis of sports and nutrition program. The major instrument that was utilized in this study consisted of survey questionnaire tool. The instrument has 3 parts. Part 1 is the demographic profile of the athletes of Bulacan State University which includes age, gender, living arrangement, and sports. Part 2 represents the level of nutritional status of the athletes in terms of BMI. Part 3 is the problems encountered by the respondents during training and competition. The research concluded that most respondents have normal body mass index. The athletes' most encountered problem during the regular training is weight management while eating disorder and lack of motivation are their least concern. Lack of sleep is the major concern or of the athletes during the rigid training while eating disorder, lack of motivation, weight management and lack of supporters are their least concern. Majority of the respondents concern is injury during competition. While time of meals and fluid intake during competition is their least concern.

KEY WORDS: Athlete, body mass index, endurance.

INTRODUCTION

This study was taken place at Bulacan State University-Malolos Bulacan, the university is participating in the different sports activities like State Colleges and Universities Athletic Association (SCUAA) which is an association of 93 institutions, conferences organizations and individuals that organizes the athletic programs of many public colleges and universities in the Philippines. Sports that are included are athletics, boxing, volleyball, basketball, tack- wando, sepak takraw, table tennis, tennis, swimming, and other. There are over 300 student athletes that participate in the SCUAA competition each year. These mentioned students are also scholars of the university. To be qualified as a SCUAA athlete, students should pass the qualifying performance. SCUAA athletes

are trained in rigid training two weeks before the SCUAA competition.

The position statement of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine that physical activity, athletic performance, and recovery from exercise are enhanced by optimal nutrition. The mentioned organizations recommend appropriate selection of foods and fluids, timing of intake, and supplement choices for optimal health and exercise performance, (American Dietetic Association and Canadian Dietetic Association, 2009).

Endurance athletes, such as long-distance runners and cyclists, use more protein for fuel than strength or power athletes do, and they retain some especially in the muscles used their sport. All athletes in training should attend to protein needs, but they should first meet their energy intake needs with adequate carbohydrate intakes. Deficit

carbohydrate intake will make athletes w burn off as fuel their protein, (William et.al 2013).

The main interest of the research is to look into for the body mass index and problems encountered by the athletes as the basis for the nutrition program.

The specific objectives of the study are the following:

- i. To determine the profile of the respondents regarding age; gender; living arrangement; and sports;
- ii. To determine the body mass index of the athletes;
- iii. To determine the problems encountered by the athletes before, during regular training and competition; and
- iv. To formulate a sports and nutrition program for the endurance athletes based on the research results.

SIGNIFICANCE OF THE STUDY

The result could add to the new dimension in determining the body mass index and problems encountered by the athletes. These may provide the basis for creating athletes nutrition and sports program for continuous improvement and could be a basis of the administration for future priority support. The researcher includes reviewing journals, periodicals, and books to obtain background information, technical material, and interview to experts in the field of sports and news about industry trends and developments for the study.

Scope and Delimitation

The study determined the body mass index of endurance athletes of the Bulacan State University. The researcher looked into the profile of the respondents regarding age; included and house- arrangement as well as the problems encountered by the athletes before, during and after the training. The results of the study can be used in the formulation of a sports and nutrition program for the endurance athletes.

The researcher conducted the study only in the Bulacan State University- City of Malolos, Bulacan. The athletes are the respondents and who participated for SCUAA competition. The height and weight were taken by the use of Detecto scale.

RELATED LITERATURE

Body composition

Optimal exercise performance can be achieved thru different factors such as the body composition and weight. Athletes' speed, endurance, and power can be influence by body weight while body composition can affect an athlete's speed, endurance, and power. A high strength-to-weight ratio is required to the most athletes because body fats adds to weight without adding to s to strength, low body fat percentages are often emphasized within many sports. Too little body fat results in deterioration of health and performance. Athletic performance cannot be accurately predicted based solely on body weight and composition. The primary reason for determining an athlete's body composition is to obtain information that may be beneficial

in improving athletic performance. The determination of an athlete's optimal body weight and composition for health and competition should be done individually, because these factors are strongly influenced by age, gender, genetics, and the requirements of the sport. Some sports dictate that athletes make changes in body weight and composition that may not be optimal for the athlete. Examples of sports like weight-class sports such as wrestling or lightweight rowing may require athletes to lose or gain weight to qualify for a specific weight category. Sports with an esthetic component such as dance, gymnastics, and figure skating can result pressure athletes to lose weight and body fat to have a lean physique, although their current weight for health and performance may be optimal. With extreme energy restrictions, both muscle and fat mass are lost, which may adversely influence an athlete's performance. An athlete's optimal competitive body weight and relative body fatness should be determined when an athlete is healthy and performing at his or her best, (Kreider, et.al,2010).

Dietary intake

Nutrient dense foods are considered the source of optimal nutrition both for college student athlete who plays basketball as well as to a 50 year old woman who enjoys walking during her lunch break. Food choices should be high in carbohydrates (more than 60% of the total calories), low in fat (less than 30% of total calories), and moderate in protein. Athletes, coaches, and scientist have long recognized that training and good nutrition should work together when it comes to improving performance. An accumulating body of scientific evidence now confirms that nutrition can profoundly influence the molecular and cellular processes that occur in muscle during exercise and recovery. Optimal nutrition is an essential part of every athlete's training program and can make a difference when winning is measured in fractions of seconds, (Rolfes, 2012).

Local Studies

A study on the health status of BuISU athletes was conducted by Fernando et.al, (2014) .The researchers distributed thirty survey questionnaire to the athletes involved in the following sports in badminton, lawn tennis, and table tennis. The athletes rarely get sick due to the proper training and diet. As per mental health and emotional states, the researchers found out that the respondents rarely experience anxiety, education-related stress and depression due to regular exposure to sports activities. In academic performances, the athletes did not get any failing grade in any academic subject for they manage to balance their time through self-discipline. The study found out that the respondent's priority still is their academic development. The research result shows in the contrast to the impression that the university athletes only prioritize their activities and are not their academic performances. The study concluded that they are physically, mentally, and socially healthy, based on their physical and emotional features.

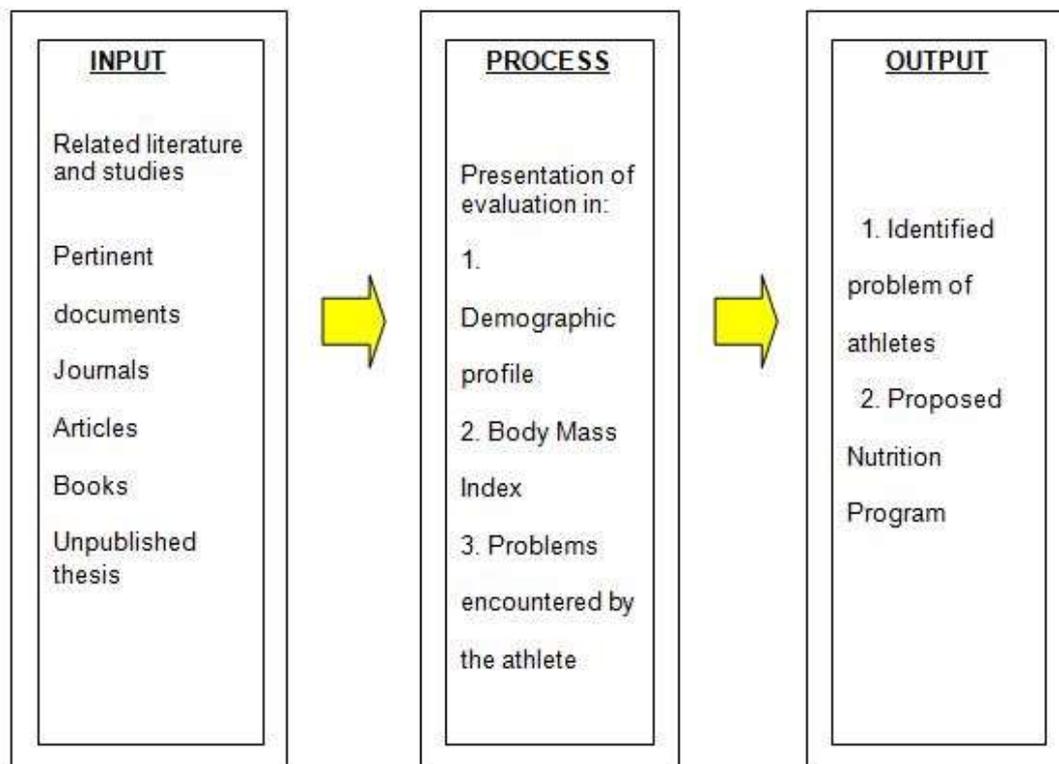
In a study done by Manalo, A. et.al., (2008) entitled, "Factors Affecting the Performance of Players of Technological Institute of the Philippines Manila", the

research concluded that athletic performance in TIP Manila are affected by school factors which included in the training and sports facilities, training scheduled, incentives, and varsity related factors (such as profiles, attitudes, types

of events, and trainers and coaches related factors such as trainer and coaches fields of specialization, attitudes and coaching techniques.).

CONCEPTUAL FRAMEWORK

Figure 1: Presents the schematic diagram of the conceptual model of the study.



The research used an Input-Process-Output Model. The first frame is the Input which pertains to the related literature and studies used in the conceptualization of the research including refereed journals, books, and unpublished thesis. The second frame is the Process which is the presentation and evaluation of the characteristics of the respondents, the body mass index of the endurance athletes and the problems they encountered during training and competition. The third frame is the output which presents the identified problems of the endurance athletes and the proposed sports and nutrition program.

RESEARCH METHODOLOGY

The researcher used a descriptive survey method of research. The respondents of the study were the varsity players of Bulacan State University. All athletes for basketball women and men as well as volleyball women and men were all the respondents Table 1 presents the distribution of respondents.

Table 1: Distribution of Respondent

Specific Games of Athletes	Frequency	Percentage
Basketball Men	8	27
Basketball Women	6	20
Volleyball Men	7	23
Volleyball Women	9	30
Total	30	100

As seen on the table 1, there are eight players for basketball men, six from basketball women, seven from volleyball men, and nine from volleyball women. Both sports have the female counterpart.

Research instrument

The research used a survey questionnaire for the data gathering. The researcher used a researcher-made evaluation using the concepts and ideas read from reading materials sources like; literature from books, journals, and inputs from the BuISU sports coaches and athletes. The questionnaire was also validated by the panel of experts in the field of nutrition, education, and sports in which their valuable suggestions are considered. The instrument have three parts. Part 1 is the demographic profile of the endurance athletes which includes age, gender, home ownership, and sports Part 2 presents the level of nutritional status of the athletes regarding BMI. Part 3 is the problems encountered by the respondents during training and competition. Permission to conduct the study is done through a letter addressed to the President of the University. The approved letter was presented to the Sports Directress for coordination to the endurance athletes. Before the respondents answered the questionnaires, the researcher took their weight thru the use of weighing scale and height by using a drop down tape measure. Before the conduct of the study, the researcher instructed the respondents on how to answer the research instrument. The athletes are instructed on how to each of the parts of the questionnaire. The researcher obtained the weight and height of the respondents for using *Detecto* scale.

PRESENTATION OF FINDINGS

This part presents the summary of findings which answers the problems and objectives raised in this study. The data on the demographic profile, BMI, problems and encountered by the endurance athletes were presented and interpreted herein.

Table 2: Profile of the respondents.

Profile of the Respondents	Age	Frequency	Percentage
18-20		20	67
21-24		10	33
Total		30	100
Gender			
Male		15	50
Female		15	50
Total		30	100
Living arrangement			
Living with Immediate Family		29	97
Renting		1	3
Total		30	100
Sports			
Basketball		14	47
Volleyball		16	53
Total			100

Table 2 shows the profile of the demographic profile of respondents. As seen in the results, the majority of the respondents 20 (67 %) were of age between 18 to 20 of years and 10 (23%) were of age 21-24 years old these athletes' ages are considered as the athletes. They are in the 2nd to 3^d-year level. With regards to gender of the respondents, 15 of 50 % are male and 15 respondents or 50 % are female. Basketball and volleyball have both genders as players. As could be gleaned from the table: 29 or 97 % of the respondents were living with the immediate family. Only for 3 % were renting, since all of the respondents are students, they still live with their immediate family because of financial incapability to live alone.

Table 3: Body Mass Index Distribution of Respondents.

Body Mass Index (Adapted from WHO, 1995,2000, 2004)	Interpretation	Frequency	Percent
17.00 -18.50	Mild thinness	5	17
18.50-24.99	Normal	24	80
25-29.99	Pre obese	1	3
Total		30	100

Table 3 represents the body mass index distribution of the respondents. As shown in Table 3 the distribution of respondents according to body mass index, the athletes of Bulacan State University vary in body mass index distribution. The researcher used the World Health Organization Guideline for body mass index. The majority of the respondents which are 24 or 80% fall between 18.50- 24.99 as interpret as the normal weight for weight, while five or 17 % are in underweight for weight for height and for having BMI results between 17.00-18.50_ Meanwhile, only 1 or 3 % of them is between 25-29.99 interpreted as overweight for height to weight of respondents are in the recommended body mass The training helps these athletes to manage their weight within the essential range. While there is only 1 (3%) pre-obese in which he also has weight management problem during regular training.

Table 4: Respondents’ Problems During Regular Training.

During regular training	Frequency	Rank
Weight management	7	1
Periods of rest and recovery	6	2.5
Injury	6	2.5
Lack of food / water or sports drink allowance	4	4.5
Facilities/ equipments for training	4	4.5
Lack of sleep	5	4
Academics	2	7.5
Lack of gear supply	2	7.5
Eating disorder	1	9
Lack of motivation	1	10

As presented on the Table 4, the most concern of the athletes is weight management (7), and lack of motivation (1) is their least concern during their regular training. As presented 5, the most concern of the athletes is weight management and lack of motivation (1) is their least concern during their regular training. Weight management is the most problem of the athletes training. Athletes come from vacation, was been reduced.

Table 5: Respondents’ Problem During Rigid Training

During rigid training	Frequency	Rank
Lack of sleep	6	1.5
Lack of gear supply	6	1.5
Lack of food / water or sports drink allowance	3	2.5
Overly intensive training	3	2.5
Facilities/ equipments for training	2	3
Periods of rest and recovery	4	4.5
Academics	4	4.5
Injury	5	5.5
Eating disorder	1	5.5
Lack of motivation	1	5.5
Weight management	1	6.5
Supporters	1	6.5

Table 5 shows the respondents' problem during rigid training. As presented in Table 5 lack of sleep (6) is the majority concern of the athletes during the rigid training while (1) eating disorder, lack of motivation, weight management and lack of supporters is their least concern. Due to severe training majority of the athletes (6) are having difficulty in falling asleep. One athlete suffered eating disorder due to pressure. One athlete found of weight management due to pressure. One athlete answered that he would like to have supporters during competition. These problems have being caused by the effect of pressure on the athletes.

Table 6: Respondents' Problem During Competition.

During competition	Frequency	Rank
Injury	8	1
Lack of sleep	5	3
Stress	5	3
Fatigue	5	3
Poor accommodation facilities	3	5.5
Food preferences	3	5.5
Meals being served	2	7
Time of meals	1	8.5
Fluid intake competition	1	8.5

This table represents the respondents' problem during competition_ As presented in Table 6, during competition majority or B of the respondents' concern is the injury .While the time of meals (1) and fluid intake (1) during events is their least concern. Due to the intense game, the majority of the athletes experienced injury during competition. Few of them had difficulty in time of meals and fluid intake due to conflict of the schedule of the event.

Table 7: Proposed Sports and Nutrition Program.

Plan	Objective	Activities	Person	Budget
1. Maintain the normal body weight of the athletes.	To monitor body weight.	Monthly weigh in	University nurse	none
2. Develop competitive weight during off season.	To maintain desirable body weight for all the season of training.	Sports Nutritionist consultation/ Monitor of university nutritionist	Sports Nutritionist	P3,000.00
3. Conduct sports and nutrition education.	To educate athletes about handling stress and injury.	Seminar workshop	Sports Nutritionist/ Professional sports trainer	P10,000.00

CONCLUSIONS

Based on the preceding findings, the following conclusions have been formulated by the researcher:

- i. Majority or 20 (67%) of the athletes are the age of 18-20 years old. The gender distribution is in equal numbers. Most of the athletes are in the volleyball type of sports;
- ii. More than one-half of the athletes (80%) have normal body mass index;
- iii. The athletes' most encountered problem during the regular training is weight (7) while eating disorder and lack of motivation (1) are their least concern.
- iv. Lack of sleep is a main concern or (6) of the athletes during the rigid training while (1) eating disorder, (1) lack of motivation, (1) weight management and lack of supporters are their least concern;
- v. The majority of the respondent's concern is injury (8) during competition. While the time of meals

(1) and fluid intake during the event is the least concern.

RECOMMENDATIONS

Based on the findings preceding conclusions, the following recommendations are at this moment offered by the researcher:

- i. Motivate athletes to maintain body mass index;
- ii. Monitoring of nutritional status. Athlete's weight would be gathered. Those who are in need of weight improvements would be monitored;
- iii. Sports and nutrition education seminar for athletes, trainers, and coaches that would be conducted by a Sports Nutritionist and allied health professionals. The activity would be coordinated to the sports directress. She would be consulted for the entire content of the program. The whole community will benefit from this, from the athletes to administration.

REFERENCES

- [1]. ADA, CDA (2009). “Nutrition and Athletic Performance”, *Medicine and Science in Sport and Exercise*, March 2009-Volume 41-Issue 3-pp 709-731
- [2]. Williams et.al (2013). *Nutrition for Health, Fitness and Sport*, 10th edition, USA: McGraw-Hill: USA
- [3]. Kreide, R.et.al,(2010).ISSN Exercise & Sport Nutrition Review: Research & Recommendations.*Journal of the International Society of Sports Nutrition*20107:7DOI: 10.1186/1550-2783-7-7
- [4]. Rolfes et.al. (2012).*Normal and Clinical Nutrition*, USA: Wadsworth, Cengage Learning
- [5]. Fernández,J. (2015).*Seasonal Strength Performance and Its Relationship with Training Load* .*Journal of Sports Science and Medicine*, Vol.14, 9-15.
- [6]. Manalo, A. et.al., (2008).Factors Affecting the Performance of Players of Technological Institute of the Philippines Manila.*TIP Research Journal Manila* Vol. 5 no. 1 (2000)

