



## SPORTS NUTRITION AWARENESS AMONG INSTRUCTORS OF FITNES CENTRES IN ADDIS ABABA, ETHIOPIA

<sup>1</sup>Abera Dessalegne, <sup>2</sup>Prof. Paramvir Singh

<sup>1</sup>Research Scholar, Department of Sports Science, Punjabi University, Patiala, India.

<sup>2</sup>Head & Supervisor, Department of Sports Science, Punjabi University, Patiala, India.

### ABSTRACT

*People from every corner of the world face up with a number of serious health and social issues such as obesity, diabetes, depression and cancer caused due to physical inactivity and diets. Most non-communicable diseases (NCDs) according to the report by WHO (2011a), are strongly associated and causally linked with particular behaviors of tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol. There are more and more evidences which support that regular exercise can help to maintain health. As a consequence there is a quick increase in the number of fitness centers, resulting in an uncontrolled and unsupervised recruitment of fitness instructors. Knowledge about sports nutrition can help the instructors to recommend nutritional advice and reasonable eating strategies in line with proper exercises. To help the customer, the instructors have to be knowledgeable about healthy eating, nutrients and effective weight loss strategies. There was no research tried to assess this situation. The purpose of this study therefore was to evaluate the sport nutrition knowledge of fitness instructors in Addis Ababa with the application of a scale previously validated by Zinn et al, (2005). The answers were tabulated and statistically evaluated qualitatively using the SPSS 20.0 for Windows. 52 fitness instructors were participated in the study and completed the 88-question survey assessing knowledge. An average score obtained was 49.8%, with a highest average of 53.15% in the domain of nutrient type and minimum average of 43.49% in the domain of weight control. Participants who give advice to the customers be likely to score better than respondents who didn't give advice to their customers. Hotel fitness centers instructors reported scores more than Commercial fitness centers instructors and the study also reveals educated instructors*

*scores more than less educated instructors. The findings suggest that fitness instructors are not well equipped with adequate knowledge of sport nutrition. Hence there is a need to improve the quality of instruction provided by them by making necessary recruitment guidelines. Additionally, different measures have to taken in order to improve the nutrition practices of the instructors and the nutrition education have to incorporate synthesis, application and evaluation.*

**Key Words:** Physical Activity, Sports Nutrition Knowledge, Instructors, Fitness Centers

## **INTRODUCTION**

The world face up with a number of serious health and social issues such as obesity, diabetes, depression and cancer caused due to physical inactivity and diets. Most non-communicable diseases (NCDs) according to the report by WHO (2011a), are strongly associated and causally linked with particular behaviors of tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol. The world health organization projects indicates that, globally, deaths due to non communicable diseases will increase by 17% over the next ten years and the greatest increase will be seen in the African region (27%) (WHO, 2008). In sub-Saharan Africa, NCDs are projected to be the leading cause of death by 2030. Mortality from non communicable diseases (NCDs) alarmingly high and is increasing. World health organization reported that thirty-eight million people die each year from NCDs, and this report shows over 14 million deaths from NCDs occur between the ages of 30 and 70, of which 85% are in developing countries (WHO, 2014). An estimated 30% of all deaths in Ethiopia (cardiovascular diseases 9%, cancers 6%, chronic respiratory diseases 3%, diabetes 1% and other NCDs 11%), according to an assessment of health report by WHO (2014) show were caused by non-communicable diseases. In addition as indicated by this report in 2008 the prevalence of other behavioral and metabolic risk factors including: physical in activity (17.9%), raised blood pressure (35.2%) and overweight (7.2%) also registered. Elevated blood pressure, obesity, and physical inactivity are more concentrated in urban populations. The study by Fikru T. (2008) revealed that predictable risk factors associated with cardio vascular diseases, such as elevated blood pressure, physical inactivity, and overweight/obesity are widely prevalent in the urban population of Ethiopia. The prevalence of high blood pressure (31.0%), overweight (20.5% in males and 37.4% in females), and physical inactivity (17.2% in males and 32 % in females) were of particular concern in Addis Ababa.

A sedentary life and poor diet are increasingly becoming part of twenty first century lifestyle leading to the rapid rise of non-communicable diseases. There are 3.2 million deaths annually that are attributed to insufficient physical activity alone (WHO 2013). Chronic illnesses of NCDs can lead to tremendous social and economic burdens due to absenteeism, job loss, a costly medical expenses, as well as increased care giving responsibilities or even the death of a main source of income. On the other hand the known benefits of regular sports activity is better weight control, physical resistance, muscle strength and lower blood pressure. Most of the non-communicable diseases can be preventable. People join fitness centers for different goals especially to make their life longer by eating healthy food, reducing stress and regularly exercising. All the problems can be minimized through physical activities and proper nutrition advices and the fitness center may be in a proper position to provide the services. Therefore, the demand of the fitness centers is increasing rapidly. The fitness industry is a rapidly growing industry and being fit now a day has shifted from a luxury to being a basic need. As a result large number of fitness centers has opened up across cities. A report by the International Health Racquet & Sports Club Association's (IHRSA, 2014) indicated that the health and fitness club industry recorded dramatic growth globally; in 2013, over 153,160 fitness centers worldwide provided services to 131,741,120 members and their revenues reached up to 75.7 billion dollars. In Addis Ababa large hotels frequently include a fitness centre as one of the facilities offered to their guests or to the community on a membership fee basis and Commercial fitness centers are also commonplace at different parts of the sub-city. With the rising in incidence of NCDs people have widely adopted primary prevention as the method of preventing disease. The health and wellness-related service providers aim at promoting the optimum health of the totality of the individual. According to Wuest & Bucher, (2003) their services span beyond the arenas of disease prevention and rehabilitative interventions to encompass such areas as physical, social, and emotional orientation. Fitness centers have been providing services in the form of exercises/fitness programmes, nutrition counseling, body massage and a host of others, all geared towards enhancing the fitness status and the overall wellbeing of their customers. There is increased awareness and interest in including exercise and proper nutrition in the everyday routine. One major problem with the fitness centers lies in that there are few instructors who are certified and qualified to provide reliable information on nutrition needs. This study tried to evaluate the sport nutrition knowledge of fitness instructors in Addis Ababa, Ethiopia. Fitness instructors as Hare et al., (2000) explain are employed to supervise customers and provide

training plans and also expected to give nutritional advice, especially as many fitness centers offer special programs for weight loss. Fitness instructors are in a proper position to give nutritional advice and they can be likely health promotion agents. They are not only responsible for helping customers design exercise programmes at the fitness centers, but also helping diet plans based on the customers' weight loss goals. It is then necessary that they are expected to be equipped with proper sport nutrition knowledge. Smith- Rockwell et al., (2001) showed that misconceptions about nutrition are common among coaches, trainers and other sports instructors. In many countries, including Ethiopia, no standardized or minimal certification is necessary to work as a fitness instructor and training programs differ in content and duration. As the study by Malek et al., (2002) reveals in the United-States, where a variety of degrees and diplomas is available the lack of nutritional knowledge, as well as the absence of relationship between field experience and competency among fitness instructors, has been reported. The combination of exercise and diet is very essential to manage weight. The combination of exercise and weight loss is incorporating weight loss programs that emphasize caloric restriction with a sensible exercise program. Reducing body weight, increasing physical activity, and improving disease risk factors are important steps to reversing the negative impact in activity has on the customers. Fitness trainers specialize in the assessment of an individual's fitness level and the design and supervision of exercise programs adapted to individual fitness. Kaats et al., (1998) indicated trainers are also expected to give nutritional advice, especially as many fitness centers offer special programs for weight loss. As explained by Cooper and Collingwood (1984), all fitness centers should have some essential programmes that should form the basis of their operation. These are fitness assessment, exercise/training regimen, nutritional counseling, and educational classes. At present as to the knowledge of the researcher the Addis Ababa fitness industry has not been researched, and no comprehensive inventory made that lists the nutritional knowledge level of the fitness instructors. Therefore, this study was targeted to evaluate the sport nutrition knowledge of fitness instructors working in the fitness centers at Addis Ababa city administration. The finding of this study may provide needed feedback and contribute to the improvement the service given by instructors of fitness centers in Addis Ababa.

## **MATERIALS AND METHODS**

**Research Design:** This was a quantitative non-experimental descriptive study. It was suited to find out the sport nutrition knowledge of fitness instructors. Primary data were collected through

the questionnaires to obtain the necessary information. The questions of the questionnaires were closed-ended.

**Measures:** A questionnaire was administered to assess the basic sports nutrition knowledge of fitness instructors who were serving the customers in Addis Ababa fitness centers. Data were collected through questionnaires, which is a valid and reliable sports nutrition questionnaire developed by Zinn et al, (2005). The questionnaire was a two part distributed to all fitness center instructors. The first section of the questionnaire presented demographic information including sex, age group, and education level and the second section of the questionnaire comprised 88 questions, and was divided into five main knowledge sub-categories: Nutrition types, recovery, fluid, weight control and supplements. Each question in the questionnaire be answered yes, no or unsure or agree, disagree or unsure.

**Participants:** The study consisted of fitness centers instructors and quota sampling method was used based on the number of fitness instructors in the fitness centers; if the number of fitness instructors was one and voluntary one instructor participated in the study but if the number of instructors were more than one, two voluntary instructors were made to fill the questionnaires. All together 65 instructors participated in the study and from these 52 of them properly field the questionnaires. Most of the instructors in the study were male. Each instructor was informed of the purpose and procedure of the study. Participants were selected in line with specific inclusion criteria. Inclusion criteria for fitness center instructors were: Working in the fitness centers for a minimum of six months, aged 18 and over. Informed consent was gained prior to start of the questionnaire.

**Data Analyses:** On completion of the fieldwork, the researcher collected all the completed surveys, invalid surveys were discarded and data were verified and descriptive were extracted from the study. Statistical analyses were performed using SPSS 20.0 for Windows and Microsoft office Excel. The results were given as Mean  $\pm$  Standard deviation and percentages. Independent t-test was used for comparisons between Commercial and Hotel fitness centers. Frequency tables were utilized to contribute to the accuracy and efficiency of processing the data. Statistical significance was established a priori at  $p < 0.05$ .

## **RESULTS**

From a total of 52 fitness instructors, 17 (32.7%) had college diploma, 21(40.4%) had bachelors degree, 6 (11.5%) had Masters' degrees and the remaining 8 (15.4%) were not even graduates. Their ages ranged from 18 to 43 years; the majority of the subjects 43(82.7%) were males. As a

group, they had an average work experience of  $3.46 \pm 1.30$  years working as fitness instructors. Almost half (48.1%) of the sample was not qualified beyond diploma and high school level. The majority of fitness instructors 35 (67.3%) provided nutrition advice to their customers.

**Table-1. Mean Percentage Scores of Sub-categories of Sports Nutrition Knowledge**

Category	Instructor category	Sub-category	Sub-category	Sub-category
		<u>Correct%</u>	<u>Incorrect%</u>	<u>Unsure%</u>
Nutrition type	Give advice	54.35	32.72	12.93
	Do not give advice	50.69	32.07	17.23
	All Instructor	53.15	32.19	15.01
Fluid	Give advice	49.21	42.54	8.25
	Do not give advice	39.22	53.59	7.19
	All Instructor	45.94	48.07	7.72
Recovery	Give advice	52.48	43.12	4.42
	Do not give advice	43.85	50.27	5.88
	All Instructor	49.64	46.70	5.15
Weight control	Give advice	45.33	41.52	13.14
	Do not give advice	39.69	44.71	15.69
	All Instructor	43.49	43.12	14.42
Supplements	Give advice	51.6	35.06	14.55
	Do not give advice	47.06	39.57	13.37
	All Instructor	49.3	37.32	13.96
Total	Give advice	50.35	36.5	13.2
	Do not give advice	46.30	39.6	14.1
	All Instructor	49.8	37.5	12.7

Table-1 indicated the mean percentage of correct, incorrect and unsure total scores obtained by fitness center instructors who provide and didn't provide advices to their customers on the sports nutrition knowledge questions. According to table- 1 fitness center instructors who provide nutrition advice to their customers in this study were more knowledgeable relatively than those who did not provide nutrition advice, as evidenced by their greater mean percentage of correct responses to the questions (50.35%). As the result indicated much of the fitness center instructors provide inexact advice. It can be said that fitness center instructors' knowledge level to the sports

nutrition questions was poor. The overall scores obtained were considered low, indicating a less than optimal (49.8%) level of knowledge, with further nutrition training needed that is appropriate to these instructors. There was a discrepancy in knowledge amongst fitness center instructor giving and fitness center instructor not giving advice and an independent t-test showed that fitness center instructor who gave nutrition advice obtained a significantly greater mean score (M=45.37) than those who did not give advice (M=40.71).

**Table- 2. Sports Nutrition Knowledge Scores by Educational Level**

<i>Level of Education</i>	<i>N</i>	<i>Total Mean ± SD</i>	<i>Percentage Score</i>	<i>p-value</i>
High school	8	36.38 ± 2.925	41.34%	0.00
Diploma	17	40.76 ± 4.590	46.32%	
Bachelors degree	21	48.10 ± 5.078	54.66%	
Masters degree	6	52.50 ± 4.848	59.66%	

P < 0.05

Fifty-two fitness instructors (80%) properly completed the questionnaires. Eight (15.4%) had studied at high school level, seventeen (32.7%) at college level (diploma), twenty- one (40.1%) at university level (bachelor degree) and the rest six (11.5%) masters degree and had followed some fitness instructor courses. The ANOVA result reveals that there is a great significant difference between the levels of education and knowledge of sport nutrition. Instructors who have bachelor degree and more scores more than 55% and those who have less have scored less (44.2%) in sport nutrition knowledge questions.

**Table- 3. Mean and Standard Deviation of Nutrition Knowledge Scores by Facility Types**

<b>Subscale</b>	<b>Facility Type</b>				<i>t-value</i>	<i>p-value</i>
	<b>Commercial fitness center</b>		<b>Hotels fitness centers</b>			
	<b>N</b>	<b>Mean ± SD</b>	<b>N</b>	<b>Mean ± SD</b>		
Nutrition type	33	21.33±3.0 (50.8%)	19	24.00± 3.7(57.1)	-2.81	.007
Fluid	33	3.70± 1.3(41.1%)	19	4.9± 1.6 (54.4%)	-2.87	.006
Recovery	33	5.36± 1.5 (48.7%)	19	5.63± 1.3 (51.2%)	-.633	.530
Weight control	33	6.45± 1.1 (43.0%)	19	6.63± 1.5 (44.2%)	-.478	.635
supplements	33	5.27± 1.4 (47.9%)	19	5.68± 1.3 (51.6%)	-1.06	.294
Total	33	42.12± 6.2(47.9%)	19	46.84± 6.3 (53.2%)	-2.64	.011

P < 0.05

*General Nutrition Score=Maximum 42, Fluid Score= Maximum 9, Recovery Score= Maximum 11, Weight Loss/ Gain= Maximum 15, Supplements Score= Maximum 11and Total Score= Maximum*

As shown in Table 2, 57.1% of the questions were replied properly by the fitness centers instructors from Hotel fitness centers, and 50.8% of the questions were replied properly by the fitness centers instructors from Commercial fitness centers to the nutrients category questions. A significantly higher number of questions were properly answered by the fitness centers instructors at Hotel fitness centers and there is a significant difference in this category between instructor of Commercial fitness centers and Hotel fitness centers ( $p < 0.05$ ). Of instructors surveyed from Hotel fitness centers, 54.4% of the fluid intake questions were answered properly, but to the contrary of fitness centers instructors surveyed from Commercial fitness centers, most of the (58.9%) did not properly answered to the fluid intake questions. Of fitness centers instructors examined from Hotel fitness centers about weight management less than half of the questions (44.2%) responded correctly and at the same way (43.0%) of these questions were answered correctly by the fitness centers instructors surveyed at Commercial fitness centers. As the independent t-test indicated there is no significance difference between these two groups of fitness instructors concerning the knowledge about weight management ( $p > 0.05$ ). The fluid ( $M = 3.70(41.1\%)$ ) and weight control ( $M = 6.45(43.0\%)$ ) sub-categories were the most poorly answered of all the sub-categories by the instructors of Commercial fitness centers and in the same case the weight control was the poorly answered sub category by the instructors who served in the Hotel fitness centers. Although these fitness center instructors have responsibilities to help customers achieve weight control according to the above result they did not have good score ( $M = 6.52(43.49\%)$ ) in this knowledge category. The belief that for lean muscles mass gain to occur, protein is the most important nutrient to increase in the diet was agreed wrongly by (90.4%) of the fitness center instructor. The finding shows that there was no significant difference ( $P > 0.05$ ) between sports nutrition knowledge of Hotel fitness centers and Commercial fitness centers instructors. Generally, table 3 shows that instructors who served in the Hotel fitness centers were scores (53.2%) more with the sports nutrition knowledge than those who serves in the Commercial fitness centers (47.9%). The total sports nutrition knowledge mean score fitness centers instructors scores was 43.85(49.8%) across the fitness centers in Addis Ababa and it can be concluded that instructors are in need of further nutrition training.

## DISCUSSION

The main dietary goal as indicated by Bedgood, B.L., and M.B. Tuck., (1983) of active individuals is to obtain adequate nutrition to optimize their health and fitness or sports performance. It is understandable that attention to nutrition issues is secondary for fitness instructors and their main responsibilities are to plan different exercises for their customers; nutrition advice is a work of nutritionist. However, if customers are not provided with sufficient nutrition resources and there is no nutritionist who can advice the customers, they will likely continue to depend on their fitness instructor for information and guidance. Professionals like fitness instructors are in a privileged position to give nutritional advice and are potential health promotion agents. If this is so, it is essential that instructors have proper information about nutrition for performance and to guide their customers. It is therefore necessary that their knowledge shall be in a position to give proper advice to their customers. This study aimed at to document the level of nutritional knowledge among fitness instructors at Commercial and Hotel fitness centers found in Addis Ababa. Fifty two fitness centers instructors were included. Nutrition is an important component of any physical fitness program. The total correct mean score achieved by all fitness instructors in this study was (49.8%). Despite these scores, (67.3%) % of the fitness centers instructors give nutrition information (advice) to their customers. In this study instructor who provides nutrition advice to their customers relatively achieved a significantly greater percentage of correct scores (50.35%) than instructors who do not provide advice (46.30%). The sub-categories that achieved the greatest mean score were nutrient type (53.15%). The majority of fitness instructors in the Hotels fitness centers (54.35%) and nearly half of the instructors in the Commercial fitness centers (50.69%) correctly answered the questions of the nutrients properly, followed by recovery and then supplements. Similarly, the study by Bedgood and Tuck's (1983) indicated that fitness centers instructors achieved their greatest score in the general nutrient category (60.7%). It was evident that many fitness centers instructors in this study were confused regarding the role of protein in weight gain and athletic performance, a consistent finding across numerous studies reviewed (Griffin, J., and M.B. Harris, 1996). The most common topics of sport nutrition misinformation were related to weight control and fluid requirements. Almost more than half (56.51%) of the responses of all fitness centers instructors regarding weight control issues covered in this questionnaire were inaccurate. This result indicates that fitness centers instructors' existing knowledge regarding weight control issues may be under question. 90.4% of fitness instructors incorrectly stated that for lean muscle

mass to occur, protein is important nutrient to increase in the diet, a consistent finding was reviewed (Griffin, J., and M.B. Harris, 1996). Approximately 75% of fitness instructors incorrectly indicated that the fluid loss of only 2% of body weight can reduce performance by up to 20%, thereby promoting excessive loss of water from the body which may cause: Water imbalance in the body, disrupts weight loss attempts, increases the risk of impaired renal function, increase the risk of potentially life-threatening heat injury and electrolyte disturbances, result in skeletal muscle cramps and muscle fatigue and altered cognitive function (ACSM 2007). Water is the most necessary nutrient for the body and it must be kept available and balance at all times during any type of activities. Losses of too much water due to dehydration may have high risk of heat stroke. Water is the most necessary nutrient for the body and it must be kept available at all times during the practice and competition.

In this study, the highest raw score was 88 which could be obtained when all the questions were correctly answered. The independent t-test in this study indicated that the difference was statistically significant ( $p < 0.05$ ) and it was found that the mean knowledge scores of the fitness instructors in the Hotel fitness centers were higher compared to fitness instructors in the Commercial fitness centers. Considering the importance of nutrition for customers, it is necessary to increase the knowledge of instructors on nutrition. As the independent t-test indicated there is no significance difference between the two groups of fitness instructors concerning the knowledge about weight control ( $p=.635$ ;  $p>0.05$ ). From the fitness centers instructors examined from Hotel fitness centers almost half of the questions ( $M=46.84$  (53.2%)) responded correctly but less than half ( $42.12$ (47.9%)) of these questions were answered correctly by the fitness centers instructors surveyed at Commercial fitness centers. The highest raw score for fluid sub categories was 9 and for weight control were 15. The fluid ( $M=3.70 \pm 1.3$ (41.1%)) and weight control ( $M=6.45 \pm 1.1$ (43.0%)) sub-categories were the most poorly answered of all the sub-categories by the instructors of Commercial fitness centers and at the same case the weight control ( $M=6.63 \pm 1.5$ (44.2%)) was the poorly answered sub category by the instructors who served in the Hotel fitness centers. Although these fitness center instructors have responsibilities to help customers achieve weight control according to the above result the fitness instructors who served in both types of fitness centers did not have good score in this knowledge category. Generally the finding shows that there was significant difference ( $p=.011$ ;  $P < 0.05$ ) between sports nutrition knowledge of instructors of Hotel fitness centers and instructors who serve in the Commercial fitness centers. The study also reveals that educational background have

an impact on the sport nutrition knowledge of the fitness instructors. Those, who possessed bachelor degree and above qualifications achieved greater total scores(55.8%) than instructors who possessed a qualification of college diploma and high school(44.2%) in the sport nutrition knowledge, and generally the above analysis revealed that the combination of three variables, instructors who possessed bachelor degree and above qualifications, who provided nutrition advice and who served in the Hotel fitness centers predicted a greater total sports nutrition knowledge scores.

## **CONCLUSIONS AND RECOMMENDATIONS**

As indicated in the study by Kalpakçioğlu BB, (2008) proper and balanced nutrition should be a perfect life style and an eating habit. Experienced nutritionist or knowledgeable instructors should advice fitness centers customers on how to select nutritious foods that will promote good health. While the concepts of nutrition may be of benefit to all customers of fitness centers, it would be challenging to have trained nutritionists to work and help the customers. As a consequence, the role of knowledgeable instructors becomes important as they are in a position to positively influence eating and exercises habit. Using a validated questionnaire to measure knowledge, this finding suggest that the fitness instructors in this study were not adequately prepared to provide proper sports nutrition information to their customer. Knowledge about weight control and fluid was particularly insufficient. In general, neither Commercial fitness centers instructors nor Hotel fitness centers instructors have sufficient knowledge on nutrition to advice or give information for their customers; given that a knowledge score of 49.8% is low. Sports nutrition knowledge was found to be low for the instructors in the fitness centers to become nutrition advisor. Therefore, it would be necessary to raise the standards for professionals working in the fitness centers. Nutrition education for instructors needs to incorporate higher levels of knowledge and cognition to help promote positive behavior change. Ultimately, improved nutrition cognition, knowledge, better attitudes and practices will allow instructors to better advice and inform their customers about the benefits of nutrition for health. It is recommended fitness centers either to contract a qualified nutritionist to provide nutrition advice to the customers or obtain additional training to the instructors to increase their nutrition knowledge. To improve these situations:

- In-service (on-job training) of the instructors who are on board should be made an available option.
- Nutrition education should be incorporated into training activities of instructors.

- The instructors should be encouraged to complete their education as they would have better understanding of nutrition and other factors related.
- Providing instructors with additional training, resources, and support from qualified nutrition professionals may be a way of providing nutrition services without hiring additional staff members.

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