Irzada Taljić[1], Lejla Biber[1], Almir Toroman[1] and Amel Mekić[2]

EATING PATTERNS OF USERS OF TWO DIFFERENT FITNESS CENTERS - COMPARATIVE ANALYSIS

Original research

[1]Faculty of Agriculture and Food Science, University of Sarajevo, Bosnia and Herzegovina

[2]Faculty of Sport and Physical Education, University of Sarajevo, Bosnia and Herzegovina

Correspondence to
Irzada TALJIĆ,
Faculty of Agriculture and Food Sciences, University of Sarajevo, Bosnia and Herzegovina
i.taljic@ppf.unsa.ba

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ABSTRACT
Athlete nutrition is an important aspect of training itself. Athletes must take sufficient amounts of all nutrients (carbohydrates, fats, and proteins) on a daily basis, as well as vita-mins and minerals that often have a crucial impact on the quality of training. Daily calories vary depending on the intensity of training, gender, and body weight of the individual. Satis-faction with daily caloric needs is crucial in maintaining constant body weight, achieving fast recovery after activity, and growth and regeneration of skeletal muscles. The objective of the study was to determine the differences in eating habits of users of two different fitness cen-ters. The study included 90 subjects of both genders and different ages. Fitness centers are different according to the type of exercise they practice: CrossFit and classic fitness centers. The survey was specially designed for this type of research. In one fitness center, the survey was conducted "live" and in another "online". The results of the research showed that there is no statistically significant difference between the respondents of the fitness center who practice classical fitness and those who practice CrossFit when choosing foods and the frequency of their use. It was also found that there was no statistically significant difference in water intake on a daily basis between the respondents of both fitness centers

Keywords: athlete nutrition, nutrition knowledge, fitness, crossfit, comparison.

INTRODUCTION

Numerous studies show that physical activity and sports have positive benefits on young people's development of their personalities as well as their emotional and psychosocial maturity. A fundamental element of successful sports is adequate nutrition, in addition to other crucial elements like physical propensity, good health, commitment to sports, and strong motivation, as well as regular training, work on speed, strength, technique, and other skills that address the unique demands of each sport. One of the most crucial elements of training and performance in sporting events is athlete nutrition. Frequently, the athletic aspect of training receives all the attention while the nutritional aspect is unfairly ignored. The best nourishment is essential for athletes to function at their absolute best. Sports nutrition recommendations are supported by scientific research. Depending on age, these recommendations change with respect to energy consumption, metabolism, and health status. The complex activities of the human body re-quire a steady intake of energy and nutrients, and during physical exertion, these requirements rise. During moderate physical activity, the recommended daily calorie intake for men is 2700 kcal and for women is 2100 kcal. [1, 8, 9, 10, 12]. Regardless of age, active sports participation significantly increases daily energy requirements. The anaerobic and aerobic energy systems are crucial for supplying the body with energy. Depending on the length and intensity of the training, physical condition, and the food taken before

to the training itself, one energy system will outperform another in providing the body [10, 15]. To ensure a stable blood sugar level throughout exercise, enable the greatest training effect, and hasten recovery time, adequate food and drink should be ingested before, during, and after training. To maintain body mass, refill glycogen stores, and provide a sufficient supply of protein for the development and repair of muscle cells, energy and food requirements, particularly those for carbohydrates and protein, must be met. Furthermore, it is erroneous to believe that a diet is healthier because it consumes less fat. To avoid the loss of body and muscle mass and to allow for the absorption of fat-soluble vitamins, one must consume enough fat [2, 13, 15].

For athletes, adequate hydration is crucial because during and after physical exercise, the composition of body fluids and electrolytes are out of balance. Sometimes, during rigorous training, drinking water alone is insufficient; instead, athletes need to consume energy and isotonic sports drinks that are high in carbs and electrolytes. They support a steady blood glucose level, give muscles an immediate energy boost, and lower the danger of hyponatremia and dehydration [2, 3, 8, 9].

In order to rebuild strength as quickly as possible after exercise, a higher meal in carbs is advised; nevertheless, water, fruits, and vegetables, as well as the requirements for fats and proteins, must not be overlooked [10].

Supplements for diet are another way to replace nutrients. Additional intake of additives and supplements is not necessary if the energy in-take is varied and sufficient to meet the needs of the organism on a daily basis [2, 4].

The aim of this study is to compare the eating patterns of patrons of two different fitness facilities. It is well recognized that good nutrition and training are essential for getting the best out-comes in sports. The so-called invisible training that significantly affects sports outcomes includes nutrition, hydration, and recovery. Training and nutrition are tightly associated be-cause athletes have higher energy requirements than non-athletes do and because hard training increases metabolic, physical, and psychological activity. If athletes want to have the best possible sporting achievements, they must not be in an energy deficit [10, 11].

METHODS

Participants

The anonymity and privacy of all respondents who took part in this research were respected, and the obtained research results were used solely for the purposes of this study. 90 participants from both sexes (46 men and 44 women), of all ages, and frequenters of two separate fitness facilities participated in the study. The two types of fitness centers—CrossFit and traditional fitness centers—differ in the exercises they offer. The first set of respondents are fitness center patrons who engage in Traditional exercise, and the second group of respondents are CrossFit patrons.

For this kind of investigation, a survey was created specifically. The poll was administered online in one center while "live" in the other. Following were the questions on the survey:

- Gender,
- Age,
- Body height,
- Body mass,
- Training frequency,
- Dietary tendencies,
- Training duration,
- An understanding of macro- and micronutrients
- Meal composition based on dietary groups,
- Preference for cooking,
- The number of meals eaten each day;
- Supplementation;
- Fluid intake.

Procedure

The subscale of the questionnaire refers to coaching and leadership competencies, contains 47 items and was created from the existing questionnaires Measuring and evaluating coaching performance using a 360° feedback process by York, R., developed in 2015, and the football coaching process - FFA coaching expertise model by Kelly C., developed in 2013. Responses to the items of the third subscale are given in the form of a five-point Likert scale, where respondents were required to indicate the level of agreement with the statements given. The questionnaire examines coaching and leadership competencies contained in 6 groups of competencies. Each competency (communication competencies, football and other competencies, organizational competencies, leadership competencies, technical and motivational competencies, training technology competencies - performance monitoring and analysis of training/matches) consists of 7 or 8 items.

Statistical analysis

The data were operationalized using adequate mathematical and statistical methods using the IBM SPSS Statistics 23 software. In the first step, basic measures of descriptive parameters were created (which include: measures of central tendency (arithmetic mean, mode, median), measures of

variability and dispersive parameters (standard deviation, variance, minimum, maximum, range) and measures of the shape of the distribution of results (skewness and kurtosis). T test was used to determine differences between eating patterns. Spearmon correlation was used to determine relationship between different nutrition factors. Statistical significance was set at $p < 0.05$.

RESULTS and DISCCSUION

The tables are used to present the results.
The Spearman correlation of fitness center patrons who engage in traditional exercise is displayed in the table below.

Table 1. Parametric Spearman's correlation among customers of fitness centers who practiced traditional fitness

Respondents of the fitness center engaged in classic fitness				
			Macronutrients	Choosing food based on macronutrients
Spearman's rho	Macronutrients	ρ	1.000	.538**
		p	.	.000
		N	40	40
	Choosing food based on macronutrients	ρ	.538**	1.000
		p	.000	.
		N	40	40

***. Correlation is significant at the 0.01 level (2-tailed).*

The parametric Spearman correlation of CrossFit users is displayed in the second table.

Table 2. CrossFit participants in fitness centers using parametric Spearman's correlation

Respondents of the fitness center engaged in classic fitness				
			Macronutrients	Choosing food based on macronutrients
Spearman's rho	Macronutrients	ρ	1.000	.535**
		p	.	.000
		N	50	50
	Choosing food based on macronutrients	ρ	.535**	1.000
		p	.000	.
		N	50	50

***. Correlation is significant at the 0.01 level (2-tailed).*

In contrast to fitness center responders who practice classical fitness, there is a medium significant connection (0.538) in the understanding of macronutrients and choosing meals based on the composition of macronutrients among CrossFit practitioners [10-15].
According to Dujmovic's research, 19% of male respondents and 5% of female re-spondents believe they eat healthily, 2% of male respondents and 3% of female respond-ents believe they eat unhealthily, and 38% of male respondents and 33% of female re-spondents don't give their eating habits a second thought. Few athletes are familiar with the fundamentals of healthy diet [5, 12].
According to this study, 9% of men and 7% of women are aware of the fundamentals of healthy nutrition, while 1% of men and 5% of women think they are ignorant of these con-cepts. Meanwhile, 49% of men and 29% of women believe they are knowledgeable about something. According to Dujmovi's research [5] on athletes' unhealthy habits, 13% of male respondents and 8% of female respondents exercise 2–3 times per week, 35% of male respondents and 14% of female respondents exercise 4–5 times per week, and 11% of male respondents and 19% of female respondents exercise more than 5 times per week [13, 15, 16].
A t-test was carried out to see if there were any differences between the dietary prac-tices of the patrons of the two fitness clubs.

Table 3. Presentation of the dietary habits of CrossFit participants in fitness facilities

	t	Mean Difference	95% CI of the Diff	
			Lower	Upper
Fish	15.891	2.275	1.99	2.56
Dough, pastes, etc.	13.906	2.050	1.75	2.35
Fried and roasted meat	11.377	1.875	1.54	2.21
Vegetables and fruits	22.898	1.100	1.00	1.20
Cakes, cakes and other sweets	19.312	2.350	2.10	2.60
Soups and stews	13.024	1.775	1.50	2.05
Cooked meals	16.402	1.425	1.25	1.60
Meat products	15.585	2.650	2.31	2.99
Cured meat products	21.227	2.675	2.42	2.93
Milk and milk products	13.724	1.550	1.32	1.78
Barbecue	19.790	2.550	2.29	2.81

The t-test of the eating behaviors of fitness center patrons who engage in traditional exercise is displayed in the table below.

Table 4. An overview of the eating habits of traditional fitness center patrons

	t	Mean Difference	95% CI of the Diff	
			Lower	Upper
Fish	18.225	2.380	2.12	2.64
Dough, pastes, etc.	17.179	2.140	1.89	2.39
Fried and roasted meat	15.206	1.520	1.32	1.72
Vegetables and fruits	13.908	1.500	1.28	1.72
Cakes, cakes and other sweets	16.506	2.240	1.97	2.51
Soups and stews	16.752	2.100	1.85	2.35
Cooked meals	17.499	1.640	1.45	1.83
Meat products	13.678	1.820	1.55	2.09
Cured meat products	18.074	2.000	1.78	2.22
Milk and milk products	15.051	1.560	1.35	1.77
Barbecue	22.316	2.180	1.98	2.38

Using t-tests to analyze eating patterns, it can be assumed that there aren't much differences in terms of food preferences or usage rates. More specifically, there is no statistically significant difference between the fitness center's subjects who engage in traditional exercise and those who engage in CrossFit [10-13, 15].

Table 5. Non-parametric correlation of CrossFit users at fitness centers

Respondents of the fitness center who practice classic fitness

			1	2	3	4	5	6
Sperman' s rho	1. Using protein-based supplements	ρ	1.000	.787**	.311	.289	.638**	.471**
		p	.	.000	.051	.071	.000	.002
		N	40	40	40	40	40	40
	2. Types of supplements and preparations based on protein	ρ	.787*	1.000	.395*	.367*	.495**	.492**
		p	.000	.	.012	.020	.001	.001
		N	40	40	40	40	40	40
	3. Creatine	ρ	.311	.395	1000	.479**	.367*	.416**
		p	.051	.012	.	.002	.020	.008
		N	40	40	40	40	40	40
	4. Preparations based on amino acids	ρ	.289	.367*	.479**	1.000	.201	.485
		p	.071	.020	.002	.	.0214	.002
		N	40	40	40	40	40	40
	5. Multivitamin preparations	ρ	.638**	.495**	.367*	.201	1000	.431**
		p	.000	.001	.020	.214	.	.006
		N	40	40	40	40	40	40
	6. Omega 3 fatty acids	ρ	.471*	.492**	.416**	.485**	.431**	1000
		p	.002	.001	.008	.002	.006	.
		N	40	40	40	40	40	40

Since it was not possible to find an existing questionnaire that would meet the needs of research and identify the competencies characteristic of football.

Table 6. Non-parametric correlation between traditional fitness practitioners and gym patrons

Respondents of the fitness center who practice classic fitness

			1	2	3	4	5	6
Sperman' s rho	1. Using protein-based supplements	ρ	1.000	.724**	.415**	.358*	.553**	.295*
		p	.	.000	.003	.011	.000	.037
		N	50	50	50	50	50	50
	2. Types of supplements and preparations based on protein	ρ	.724**	1.000	.574**	.494**	.036	.408**
		p	.000	.	.000	.000	.802	.003
		N	50	50	50	50	50	50
	3. Creatine	ρ	.415**	.574**	1000	.861**	.288*	.538*
		p	.003	.000	.	.000	.043	.000
		N	50	50	50	50	50	50
	4. Preparations based on amino acids	ρ	.358**	.494**	.861**	1.000	.390**	.634**
		p	.011	.000	.000	.	.005	.000
		N	50	50	50	50	50	50
	5. Multivitamin preparations	ρ	.553**	.036	.288*	.390**	1000	.535**
		p	.000	.802	.043	.005	.	.000
		N	50	50	50	50	50	50
	6. Omega 3 fatty acids	ρ	.295*	.408	.538**	.624**	.535**	1000
		p	.037	.003	.000	.000	.000	.
		N	50	50	50	50	50	50

According to the non-parametric correlation, supplement use varies amongst patrons of these two fitness facilities. CrossFit practitioners use supplements more frequently than non-CrossFit practitioners do. Associations like the American Society for Sports Medicine and the American Dietetic Association advise against supplementing athletes' diets with extra minerals and vitamins [6, 7, 9, 10, 17]. From the results of the research of fitness center users who engage in classic fitness and fitness center users who engage in CrossFit, it can be concluded that the use of supplements among the users of the mentioned fitness centers is justified, because the vast majority shows insufficient commitment to nutrition, and supplements should supplement nutrition, which is actually their function, to help balance nutrients, and help achieve sports goals [10-14, 16-18].

According to the findings of the study on CrossFit and traditional fitness center patrons, it is reasonable to assume that supplement use is common among patrons of the aforementioned gyms. This is because the vast majority of patrons exhibit a lack of dedication to proper nutrition, and the purpose of supplements is to balance nutrients and support athletic goals [19, 20]. Ultimately, a study was done to examine the food preferences and frequency of use of two groups of fitness center users: those who practice Traditional fitness and those who practice CrossFit. Based on statistical analysis, the study discovered no significant difference be-tween the two groups in terms of the types of foods people pick or how frequently they consume them. This shows that the type of exercise one does may not have a direct impact on their dietary patterns [14-18].

CONCLUSION

It can be concluded that the majority of respondents have flexible diets and eat in accordance with their individual preferences and assessments, which are typically not in line with their sporting goals, which is typical given that they are recreational players. This is true even though there are individual differences in the diets of the respondents, and there is still no statistically significant difference between the two compared fitness centers. According to the data, it is clear that the majority of respondents who participate in athletics do not place a high priority on nutrition. In the end, the significance of an individualized approach and the necessity for each person to experiment with themselves and their bodies to determine what, when, how, and how best meets their needs and style of training. The findings of this study point to the need for more education because imparting to athletes the value of sports nutrition is just as crucial as imparting it during physical training.

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Conflict of Interest

The authors do not have any conflicts of interest to disclose. All co-authors have reviewed and concurred with the manuscript's content, and no financial interests need to be reported.