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## REASONS FOR APPLICATION OF DIETARY SUPPLEMENTS IN FITNESS

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### Abstract

In addition to reducing physical activity, we have a significant increase in living standards, which also increases the risk of developing overweight. Therefore, fitness as a physical activity, as a tool in terms of movement therapy, is increasingly finding application in contemporary life. With the increase of interest for fitness there is also the interest for the use of dietary supplements among the population which performing fitness. The purpose of this paper is to assess the prevalence of use of dietary supplements in people who exercise in fitness centers, what are the reasons for their use and the types of supplements used by them. The Hi-square ( $\chi^2$ ) test is used to determine if there is a significant difference between the expected frequencies and the observed frequencies. The results obtained show that the majority of respondents use supplements (78%), and that the source of information about the use of supplements in fitness is the fitness instructor with 56%. Among the reasons for applying supplements in fitness is the reduction of fat mass by 70%, weight loss by 70% and replacement of food deficiencies 46%. The most used supplements are **Casein** (protein) with 58%, L-carnitine / body attack (weight loss) with 34%, Fish oil omega 3 with 30%, Hydraxcut - elite (weight loss) with 26%. It has been

proven that with the increase of interest of female persons for fitness, their interest for the use of dietary supplements has also increased.

**Key words:** fitness, women, dietary supplements, chi square test

## **Introduction**

Middle age for women is a period of great changes in both physical and mental status. Unfortunately, for most women, their priorities are work and children, so their health care remains in the last place. As working hours are lengthening, there is less and less free time, the time needed for recreation and leisure activities is very limited, so women live in a time where food consumption and stress are increasing as time goes by (Andrijašević, 2010).

In recent decades, the importance of fitness, as a very important element for human health, is increasingly emphasized. In the first place, physical activity in fitness affects the prevention and reduction of overweight, cardiovascular and respiratory diseases and many other diseases that make us think and act to integrate sports activity into daily life as a natural and necessary need for all the people.

Physical activity in fitness has a strong positive effect on human health, especially in the pathogenesis of diseases that make up the metabolic syndrome (insulin resistance, type 2 diabetes, hyperlipidemia, hypertension, and overweight). There are strong arguments that physical activity increases functional capacity and quality of life (Vuori, 2004; Das, & Horton, 2012).

Food and physical activity largely determine human health (Joint FAO / WHO Expert Consultation, 2003), and increased energy consumption is one of the main causes of increasing numbers of overweight people (Cutler, M., Glaeser, EL, Shapiro, JM 2003). Today, there is compelling evidence that increasing intake of high-energy foods, rich in fats and sugars, contributes to the development of obesity (Joint FAO / WHO Expert Consultation, 2003). Intake of certain food groups is associated with a higher or lower risk of being overweight. The need for nutrient energy is high among people who do sports and those who exercise fitness, and many of the humanities focus on the optimal distribution of energy to enable the execution of exercises of varying intensity and duration.

Studies have clearly shown that the need for carbohydrates and other nutritional supplements increases with increasing intensity and volume of exercise, and many studies provide valuable guidance on how to better supply carbohydrates to optimize glycogen stores, how to better consume the carbohydrates during exercise and competition and as energy substrates contribute to muscle recovery. The contribution of proteins to muscle function and recovery is now much better understood than in the past and that there is a new science (nutrition in sport) that clarifies the relationship between mental and muscle function mediated by carbohydrates, proteins and fats (Meussen, Smolders, Sarre, et al. 1997; Burke, Hawley, Wong, et al. 2011). Dietary supplements or food supplements are products that complement the normal diet and represent

concentrated sources of vitamins, minerals and other substances with nutritional or physiological effect, can be used individually or in combination and can be found in various forms, designed so that to be used in individual quantities measured in the form of tablets, capsules, powder in bags, solutions in ampoules and others (Dikić, Suzić, Radivojević, 2008).

A significant number of people who exercise consume protein supplements mixed with other products (mainly creatine and amino acids). A limited number consult 'dietitians' and mostly get information from their instructors. Approximately half of the participants who exercised regularly in fitness centers received supplements and most of them received information from non-health professionals. There is a correlation between the duration of exercise and the use of hormones and other supplements (Cooper, Naclerio, Judith Allgrove, & Jimenez, 2012).

Regarding the use of keratin, although taking keratin as an oral supplement is considered safe and ethical, perception and evidence of safety of consumption can not yet be guaranteed, especially if administered for a longer time in different categories of the population (athletes, younger or older) (Cooper, et al. 2012).

Based on the research conducted, although such research shows an increasing trend in various European countries, in our country there is still no similar work that has researched this field, so this paper will provide a basis for future research in this direction. The main purpose of this paper is to assess the prevalence of use of nutritional supplements in people who exercise in fitness centers, what are the reasons for their use and the types of supplements that are most often used in fitness in order to create an overview general and identify the main reasons for using these substances.

## **Methods**

The study is a transversal (cross-sectional) research and data that were collected through a semi-structured, self-administered questionnaire. The study was conducted in the city of Prishtina, Kosovo. Fitness centers are randomly selected, considering the frequency factor of the persons who exercise. One of the criteria for selecting the centers has been the participation of women representing age groups of 20-40 years. The selected sample is a total of 50 females. The duration of completing all questionnaires was realized in the time period of 2 (two) months, from March 1, 2018 to May 20 of the same year. The questionnaire with questions for the purposes of this study was modified according to the needs of this paper (Robertson, Lobstein, Knai, 2007; Miljković, M., Stojiljković, M., and Radulović, O. 2013). The three questions applied to this questionnaire were: Have you consulted anyone in advance about the effects of using them? If so, who instructed you to use the supplements? If you use supplements, what are the reasons? Circle the type of supplements you use? The Hi-square test ( $\chi^2$ ) is used to determine if there is a significant difference between the expected frequencies and the observed frequencies within the group. All statistical analyzes were published with SPSS program (Statistical Package for Social Sciences version 20.0).

## **Results**

Of the 50 respondents participating in fitness to the question 'do you use supplements', 39 respondents or 78% of them state that they use supplements and 11 respondents or 22% of them state that they do not use supplements. Chi-Square difference coefficient = 15.68;  $df = 1$ ; and Asymp. Sig. = 0.00 indicates that there is a statistically significant difference within the group in question whether you use supplements (Table 1).

Table 1. Difference within the group in the question  
Do you use supplements?

Women	N	%
Yes	39	78
No	11	22
Total	50	50
Chi-Square	15.68	100
df	1	
Asymp. Sig.	0.00	

To the question ‘who instructed you to use supplements’, 28 respondents or 56% of them state that they use supplements on the recommendation of the fitness instructor (trainer), no respondent states that they used supplements without instructions, 7 respondents or 14% of them state that they use supplements with instructions from the media, 4 respondents or 8% of them state that they use supplements with instructions from the company and and 11 respondents or 22% of them state that they do not use supplements. Chi-Square difference coefficient = 27.60; df = 3; and Asymp. Sig. = 0.00 indicates that there is a statistically significant difference within the question group as to who instructed you to use the supplements (Table 2).

Table 2. Differences within the group in the question  
Who instructed you to use the supplements?

Reasons	N	%
Trainer	28	56
Myself	0	0
Media	7	14
Friends	4	8
I don't use	11	22
Total	50	100
Chi-Square	27.6	
df	3	
Asymp. Sig.	0.00	

To the question ‘who instructed you to use supplements’, 28 respondents or 56% of them state that they use supplements on the recommendation of the fitness instructor (trainer), no respondent states that they used supplements without instructions, 7 respondents or 14% of them state that they use supplements with instructions from the media, 4 respondents or 8% of them state that they use supplements with instructions from the company and and 11 respondents or 22% of them state that they do not use supplements. Chi-Square difference coefficient = 27.60; df = 3; and Asymp. Sig. = 0.00 indicates that there is a statistically significant difference within the question group as to who instructed you to use the supplements.

Respondents to this question gave more than one answer. The results obtained show that within the group of respondents there is a statistically significant difference in terms of the question ‘if you use supplements, what are the reasons’, because Chi-Square = 114.71; df = 11; Sig. = 0.00, which means that most respondents are statistically different from each other. Most respondents are those who think about reducing fat mass with a total of 35 respondents, weight loss with a total of 35 respondents, replacing malnutrition with a total of 23 respondents, strengthening immunity with a total of 12 respondents, strengthening muscle with a total of 11 respondents, not using with a total of 11 respondents, improving performance with a total of 9 respondents, preventing future diseases with a total of 7 respondents, increasing muscle mass with a total of 5 respondents, reducing stress with a total of 4 of respondents, weight gain with a total of 3 respondents and food replacement with a total of 2 respondents (Table 3).

Table 3. Differences within the group in the question If you use the supplement, what are the reasons?

Reasons	N	%
Weight gain	3	6
Muscle strengthening	11	22
Increased muscle mass	5	10
Food replacement	2	4
Improving performance	9	18
Prevention of future diseases	7	14
Replacing food shortages	23	46
Strengthening immunity	12	24
Weight loss	35	70
Reducing stress	4	8
Reduction of fat mass	35	70
Did not use	11	22
total	157	
Chi-Square	114.26	
df	11	
Asymp. Sig.	0	

Respondents to this question gave more than one answer. The results show that within the group of respondents there is a statistically significant difference in terms of the question ‘circle the type of supplements you use’, because Chi-Square = 56.27; df = 9; Sig. = 0.00, which means that most respondents are statistically different from each other. Most respondents are those who use Casein (protein) with a total of 29 respondents, who use L-carnitine / body attack (weight loss) with a total of 17 respondents, who use Fish oil omega 3 with a total of 15 respondents, who use Hydraxycut - elite (weight loss) with a total of 13 respondents using Whey gold (lean muscle) with a total of 12 respondents using Multivitamins with a total of 11 respondents, then not using with a total of 11 respondents, then using Amino Acids (for lean muscle / muscle growth) with a total of 7 respondents, using Creatine (muscle strengthening) with a total of 5 respondents, then

using Pre-workout (fitness energy) with a total of 4 respondents, using Mass tech (weight gain) with a total of 3 respondents and using Testosterone with a total of 3 respondents (Table 4).

Table 4. Differences within the group in the question Circle the type of supplements you use?

Supplementet	N	%
Mass tech (weight gain)	3	6
Whey gold (clear muscles)	12	24
Creatine (strengthen the muscles)	5	10
Aminoacide (increase volume of muscles)	7	14
Hydraxycut – elite (weight loss)	13	26
L-carnitine/body attack (weight loss)	17	34
Multivitamina	11	22
Pre-workout (energy for fitness)	4	8
Fish oil omega 3	15	30
Casein (protein)	29	58
Testosteron	3	6
I don't use	11	22
Total	77	
Chi-Square	56.27	
df	11	
Asymp. Sig.	0	

## Discussion

This research shows that the collection of information experimentally and the application of quantitative methods in their processing are necessary to determine the veracity of empirical research. Being a fitness instructor (trainer) is a very responsible job because it is significantly responsible in certain processes of change in the body of persons during exercises, during which mistakes are unacceptable. The organizational skills of the trainer are no less important than the features which have been mentioned so far. The obligations that lie before him are varied and complex, because he is always in a situation to be the organizer of many activities at work. He is a professional and pedagogical leader, according to which he is the organizer of various activities (training, preparation, monitoring the development and progress in fitness). Attendees should create confidence in the work of the coach. In our surveyed research have full confidence as regarding the use of supplements.

Respondents to the question whether you have consulted someone in advance about the effects of using supplements state that they have been consulted and that the trainer has almost been the only source of information. The reason for applying the supplements to the respondents was primarily weight loss, reduction of fat mass, replacement of nutritional deficiencies, strengthening of immunity and strengthening of muscles.

From the supplements used in the respondents it was in the first place are: Casein (protein), L-carnitine / body attack (weight loss), Fish oil omega 3, Hydraxycut - elite (weight loss), Whey gold (pure muscle), Multivitamins, Amino Acids (for lean muscle / muscle growth) and so on.

With this research we found that 39.0% of female participants in the survey know what the term "supplement" means, which compared to the research of (Froiland et al., 2004) have similarities. The results obtained in our research are in line with the research of other authors where they mostly answered that supplements are "something that affects muscle growth", "supplementation of substances not taken from the diet", "help regenerate and strengthen immunity", "dietary supplement", "strength enhancers", "for better nutrition", "vitamins and minerals" and similar. According to DSHEA 1994, a "supplement" is defined as a product that is consumed as a dietary supplement. Products consumed as supplements may contain vitamins, minerals, plants or other botanical ingredients, amino acids, enzymes, organ tissues and metabolites (FDA, 1994) (Bottegoni, Favia, Recanatini & Cavalli, 2012). In a study conducted in Norway, most athletes stated that they take supplements "just like that" because they believe they need them as a supplement to their daily diet (Sundgot-Borgen with bp., 2003), while, according to research conducted in Canada, athletes reported consuming supplements to (according to frequency of response): stay healthy, boost energy levels, support the immune system, improve athletic performance (Sundgot-Borgen et al. 2003). Athletes in some studies did not notice the health effects by taking supplements: 70% of them have not noticed any health problems. These data support the fact that most athletes receive the recommended and safe dose of supplements (Sundgot-Borgen et al., 2003). Overall, the general population always wants to lose weight, while athletes believe that their weight is low and they tend to be "bigger". In order to have an insight into how many athletes link sports and supplements, the authors in their research asked questions about starting to take supplements and the planned length of taking supplements. 22% of athletes said they have taken supplements since they started doing sports and 30.9% of them say they will take supplements as long as they do sports. The need for supplements is justified in rare situations (inability to take nutrients with food), while with a balanced diet there is no need for supplements (Sundgot-Borgen et al., 2003). Nutrition is a very important factor in fitness and is important for human health and therefore it is important to make the population aware of the importance of a healthy diet. Nutrition for recreation, fitness and athletes is part of professional sports and an important factor in achieving results as much as training itself. With today's fast-paced life, it is difficult to ensure a quality and balanced diet, and this is a particular challenge for athletes and fitness enthusiasts. Athletes need to get adequate amounts of nutrients (carbohydrates, fats and proteins) every day, as well as vitamins and minerals that often have a substantial impact on the quality of training. Daily calorie needs vary depending on the intensity of training, gender and body weight of the individual. Meeting daily caloric needs is essential in maintaining a constant body weight, achieving rapid recovery after activity, and growing and regenerating skeletal muscle. Special attention should be paid to diet before, during and after exercise. One of the limiting factors of sports performance is adequate hydration. Fluid intake should be sufficient and continuous to prevent dehydration and the health risks caused by it. Adapting a diet is important for athletes and those who deal with fitness. A diet low in some nutrients will require the use of different types of substitutes. Due to the large number of substitutes available in the market, it is not possible to establish proper control over all, so care must be taken when consuming them in order to avoid unwanted health consequences.

## Conclusion

Due to the great need for nutrients in people who exercise fitness in most cases, depending on the intensity and scope of the work, in training sessions in most cases (from experience to date) they consume supplements (additional nutrients) to meet the needs of the body. These supplements today are numerous in the market and with different effects, and unfortunately in some cases even without an application permit and without relevant instructions. The results obtained show that it is necessary to pay more attention to promoting the proper use of dietary supplements and the possible side effects of these preparations, both through formal education and through public education. A particular research topic in the future would be to consider the use of dietary supplements in certain groups of patients suffering from chronic diseases and the possible interaction of dietary supplements with medications used in prescribed medical therapy. However, when it comes to the diet of people who exercise, special attention should be paid, above all, to a well-balanced diet (taking into account the differences between people who exercise, as well as the intensity and intensity during training sessions or exercises), and when deemed justified, care should be taken to determine which dietary supplements should be used and over what period of time.

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