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A Qualitative Research on National Athletes' Use of Ergogenic Aids: The Case of Combat Athletes

Nurten DİNÇ[1*], Ezgi ABAY BEŞİKÇİ[1]
[1]Manisa Celal Bayar University, Faculty of Sport Sciences, Manisa, Turkey

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Abstract

The aim of the study is to examine the views of national athletes on the use of ergogenic aids. Qualitative research method was utilized in the study and phenomenology design was used. The study group of the research was determined by 'convenience sampling' technique within the framework of the purposeful sampling method. The study group consisted of students 36 studying at Manisa Celal Bayar University Faculty of Sports Sciences and national athletes in combat sports. As a result of the analysis of the data obtained, the codes for starting to use ergogenic support were obtained as individual research, friend recommendation, coach recommendation (trainer) and doctor. For the duration of using ergogenic support, short (less than 1 month), medium (1-5 months) and long (6 months and more) codes were obtained. In the reason for the use of ergogenic aids, the codes of weight loss, preparation for the competition and accelerating recovery were reached. As a result of the analysis of the data obtained, in Figure 4, the codes of psychological well-being, fat burning, weight loss, physiological recovery, fast recovery (after training after injury), performance increase were reached as positive in the contribution of ergogenic aids. Negatively, weight gain, kidney fatigue and abdominal pain codes were obtained. As a result of the analysis of the data obtained, in the emotions after the use of the product in Figure 5; psychologically, psychological well-being, motivated, anxious, ease of focusing and happy codes, and physiologically energetic/dynamic, tired, sleep comfort and gaining strength codes were reached.
Keywords: Ergogenic aids, Combat athletes, Sports

[*] **Corresponding Author:** Ezgi ABAY BEŞİKÇİ, **E-mail:** ezgiabay@outlook.com

INTRODUCTION

Nowadays, various research are being conducted to improve performance and some of these sttudies are focused on ergogenic aids. Ergogenic aids are categorized as mechanical or biomechanical, psychological, physiological, pharmacological and nutritional (Bala & Bhalla, 2022; Forbes et al., 2024; Kadwe, 2021). Nutritional ergogenic aids can be defined as substances or techniques that aim to improve performance by increasing energy production and utilization and delaying fatigue with nutrients that contribute to improve performance in addition to training and are not considered doping (De Oliveira et al., 2023). Substances or methods such as certain vitamins, minerals, amino acids, herbs, metabolites and different combinations are considered ergogenic aids. These substances or methods are used by many athletes as supplementary nutrients for purposes such as optimal energy supply, balance of energy systems and development of body tissue (especially the development of lean body mass or muscle tissue). They can also help to fill micronutrient deficiencies and meet energy and macronutrient needs that are difficult to obtain through food intake alone. Many studies show that these supplements also help maintain overall health by supporting the utilization of certain nutrients in the human body (Bhasin et al., 2001; Maughan et al., 2018).

Athletes are under great stress, both physically and mentally, when performing high-intensity sports with frequent training (Honceriu et al., 2021). As training programs become increasingly demanding, athletes are paying more attention to nutrition to gain an advantage over their competitors (Maughan et al., 2018), and the use of ergogenic supplementation is a common strategy among athletes (Garthe & Maughan, 2018). Individuals who are better able to adapt to high levels of training often experience greater gains over time, which can lead to improved performance (Kadwe, 2021). Ergogenic aids also help individuals become more resilient to heavy training by helping them recover faster or prevent injury during high-tempo training, helping them stay healthy (Kreider et al., 2017; Porrini & Del Bo', 2016).

Recent studies show that nutritional erogenic support products are widely used among athletes. Tabata et al. (2020) 63.9% of Japanese track and field athletes, Baltazar-Martins et al. (2019) 64% of elite Spanish athletes, Waller et al. (2019) 87% of Australian athletes, Wardenaar et al. (2017) reported that 84.7% of athletes, Dascombe et al. (2010) reported that 87.5% of elite athletes in seven different sports branches from the Western Australian sports institute, Braun et al. (2009) reported that 67% of elite German athletes used supplements. A conscious use of ergogenic supplements according to the physical and physiological characteristics required by the branch together with nutrition can have a significant effect on athletes. Improper use of ergogenic supplements may have negative effects on the health of the athlete or may cause accidental doping of nutritional supplements containing substances prohibited by the World Anti-Doping Agency (Oliveira et al., 2023).

Research on the use of ergogenic aids by national athletes is ongoing to learn more about their efficacy, safety, and health risks. Athletes, coaches, and health professionals should pay attention to obtaining information from reliable sources in order to make informed decisions regarding the use of ergogenic aids (Wickham & Spriet, 2024). Based on this, this study aimed

to examine the frequency of use of nutritional supplements in national combat athletes, which types of supplements are preferred, the reasons for their use and the sources of advice received in this regard.

METHOD

Research Model

In this qualitative research, it was aimed to examine the views of national athletes on the use of ergogenic aids. In this research, qualitative research method and phenomenology design was used. This approach was adopted because the common points of the events subject to the research were tried to be defined, understood, and described in depth.

Study Group

The study group of the current research was selected by purposive sampling method. In this direction, the study group of the research was determined by 'convenience sampling' technique within the framework of purposeful sampling method. According to Patton (1987), purposive sampling is the in-depth examination of situations that are thought to have rich information. Convenience sampling technique can be defined as the selection of situations that are close and easily accessible by the researcher in the research (Yıldırım & Şimşek, 2018). The study group of the research consists of 36 students studying at Manisa Celal Bayar University Faculty of Sports Sciences and who are national athletes in combat sports (judo, wushu, taekwondo, kick boxing, and karate).

Data Collection Tools

In the study, a demographic information form prepared by the researcher regarding personal information (gender, age, branch, and years of national sportsmanship) and an interview form including semi-structured interview questions were used as data collection tools.

Interview questions directed to the participants;

1. Do you use ergogenic aids? If yes, can you explain what they are?

2. How did you start using ergogenic aids and how long have you been using them (example: who suggested them?)?

3. Have you seen any benefit or harm from ergogenic aids? Could you explain?

4. How do you feel after using the products?

Ethical Approval

The scientific and ethical approval of the study was obtained from Manisa Celal Bayar University Faculty of Medicine Dean's Health Sciences Ethics Committee with the decision number 20.478.48/23339 dated 03.04.2024.

Data analysis

Descriptive and content analysis were used in the study. In the research, descriptive analysis was used to examine and compare the themes by creating codes from the data obtained through semi-structured interview questions determined by the researcher. Since new themes were

obtained from the answers given by the participants participating in the research, content analysis was used. In order to ensure the confidentiality of the participants during the analysis process, the participants were coded as "P1, P2, P3....P23" instead of their real names. In the analysis of the data, the data were first coded and themes were found by 3 academicians who are experts in the field and qualitative research. After the analysis, the codes and themes were modelled and the stage of defining and interpreting the findings was started. In addition, the raw data obtained within the scope of the research (file folders, computer folders, field notes) are carefully kept for examination when necessary.

Validity-Reliability

In order to ensure the internal validity of the study, the participants were interacted with during the data collection process. At the end of the interviews, the data were shown to academicians specialised in the field and qualitative research. In order to avoid inaccuracies and deficiencies, they were checked, and participant confirmation was obtained. Purposeful sample selection was made, and care was taken in the data collection process, and the processes and results of the research were described in detail to ensure external validity.

FINDINGS

Findings Related to Participants' Personal Information

There is some information about the participants who participated in the study. The study group of the research consists of 36 national athletes. It was seen that 23 of the participants used ergogenic support, and 13 participants did not use ergogenic support. Considering the gender of the participants whose age range was 18-34, 47.2% were female and 57.7% were male. When the departments of the participants who participated in the research are examined, it is seen that they vary between physical education and sports teaching, coaching education, sports management and recreation departments. When the findings related to the sports branches of the participants were examined, it was seen that judo, wushu, taekwondo, kick boxing, and karate.

Table 1. Ergogenic aids used

L-Carnitine	P1, P2, P3, P7, P16, P17, P18
Creatine	P3, P5, P6, P7, P14, P15, P17, P19, P21, P22
Branched-chain amino acid	P3, P4, P5, P6, P21
Magnesium	P3, P6, P9, P20
Collagen	P3, P4, P20
Protein Powder	P4, P5, P14, P15, P16, P17, P19, P21, P23
Vitamin C	P9, P16, P23
Vitamin D	P9, P23
Preworkout	P15, P19
Zma	P19
İzoplus	P6
Nitrite Oxide	P5
Bromeline	P9

Some of the participant opinions regarding the codes obtained from the participants regarding

the question "Do you use ergogenic aids? If yes, can you explain what they are?" and indicated in Table 1 are given below.

- *I used it for about 3 years, but I used it in the form of 2-week loads every 3 months. I used BCA and glutamine supplement (P11).*
- *Yes, I use BCA, protein powder, l carnitine, creatine, vitamin C and multivitamin (P16).*
- *Yes, I do. Protein powder, zma, bca, preworkout, caffeine pills. I actively use creatine and protein powder (P19).*
- *Yes, I use protein, creatine, bca, amino acids, I usually prefer these (P21).*

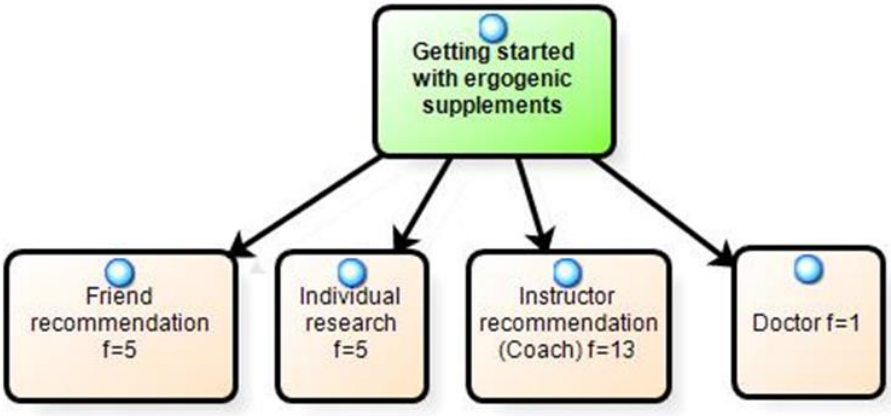

Figure 1. Getting started with ergogenic supplements

As a result of the analysis of the data obtained, the codes of starting to use ergogenic aids; individual research (P1, P9, P15, P21, P23), friend recommendation (P2, P5, P7, P8, P23), coach recommendation (coach) (P3, P4, P6, P10, P11, P12, P13, P14, P16, P17, P18, P21, P22), doctor (P20) were obtained in Figure 1.

Some of the participant opinions regarding the codes obtained from the participants regarding the question "How did you start using ergogenic aids and how long have you been using them (e.g. who suggested them?)" and indicated in Figure 1 are given below.

- *I actually started on my own research. How I started using it is that I realized that I could not lose weight while losing weight. After a while, I switched to l carnitine because the fat rate decreased and I switched to l carnitine to burn the remaining fat in the body. I actually used it for 2 weeks. I used it to equalize my weight while preparing for the national team camp. I did not use it in my normal life except for the 2-week period. I first used it when I was 18 years old (P1).*
- *When I went to the national team, our national team coaches recommended it so that we could do the load training more comfortably, and I used it at that time, but I don't use it now. I used it for 1 month in 1-month periods, there were camp breaks for 2 weeks, and then when we started camp again, I continued according to the frequency of the load training. (P6).*
- *I started using it after I became a national athlete. I usually use it close to the match periods. I started with the advice of our coaches in the national team (P17).*
- *I researched it, but my coach usually helped me, I have been fighting and doing sports for 13 years, I have been using it regularly for 13 years (P23).*

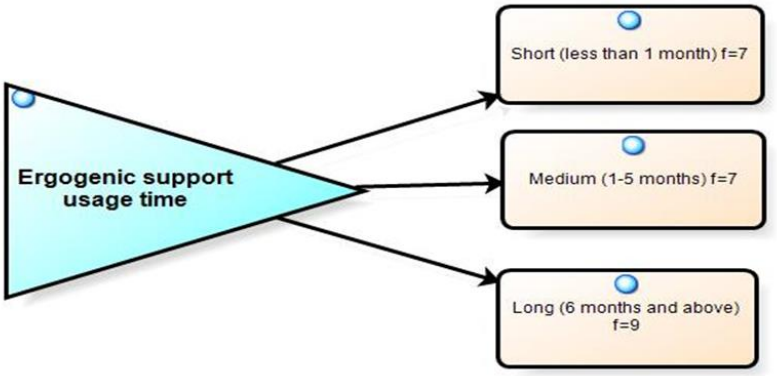

Figure 2. Ergogenic support using time

In Figure 2, the codes of short (less than 1 month) (P1, P2, P3, P7, P8, P13, P17), medium (1-5 months) (P4, P6, P10, P11, P12, P14, P18), long (6 months and more) (P5, P9, P15, P16, P19, P20, P21, P22, P23) were reached.

Some of the participant opinions regarding the codes obtained from the participants regarding the question "How did you start using ergogenic aids and how long have you been using them (e.g. who suggested them?)" and indicated in Figure 2 are given below.

- *When I was 17 years old, I had vitamin D deficiency at a doctor's appointment I went to, and that's when I started to use it. After that, I started to use it by researching myself, with the recommendation of my dietician, etc. because he said that I had the opportunity to lose weight more easily with these. Since the sport we do is a weight sport due to vitamin deficiency, I continued after that because it would make it easier. I have been using it for 4-5 years (P9).*
- *I started doing fitness before the pandemic, I discovered them myself at that time, I researched them on the internet, training science, etc. Since then, I have been using certain supplements regularly, although not very regularly. I have been using them for an average of 3-4 years (P15).*
- *I started with the advice of my teacher. I also saw international athletes in matches. I have been using it since I was 16 years old. I continue to use it actively except for some (P16).*
- *My coach recommended me to use it and I have been using it for about 2 years and I continue to use it actively (P22).*

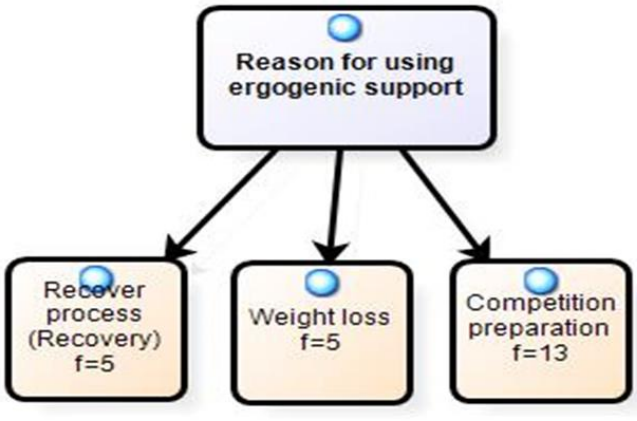

Figure 3. Reason for using ergogenic support

In Figure 3, the reason for using ergogenic aids; weight loss (P1, P7, P9, P2, P8) competition preparation (P3, P5, P6, P11, P12, P13, P14, P16, P17, P18, P21, P22, P19), accelerating recovery (P4, P20, P23, P10, P15) codes were reached.

Some of the participant opinions regarding the codes obtained from the participants regarding the question "How did you start using ergogenic aids and how long have you been using them (e.g. who suggested them?)" and indicated in Figure 3 are given below.

- *I used it at a time when I needed to lose weight, and I stopped after only 1 week. I knew that my friends were using it, and I preferred to use it because I thought it helped them too (P7).*
- *Since it is our weight sport, weight drops occur. When we lose weight, we feel a deficiency in our strength. Here, the importance of BCA and glutamine was recommended by our coaches, and this is how we started in the national team. We usually used it 1 month before the last 1 month and 2 weeks before the matches because we were overweight (P11).*
- *We needed it because we spent some energy while preparing for the matches. That's why we used it. My coach recommended it. I used it for 1 month (P18).*
- *I have been using it for 1 year. I started with the advice of a doctor to improve a chronic injury (P20).*

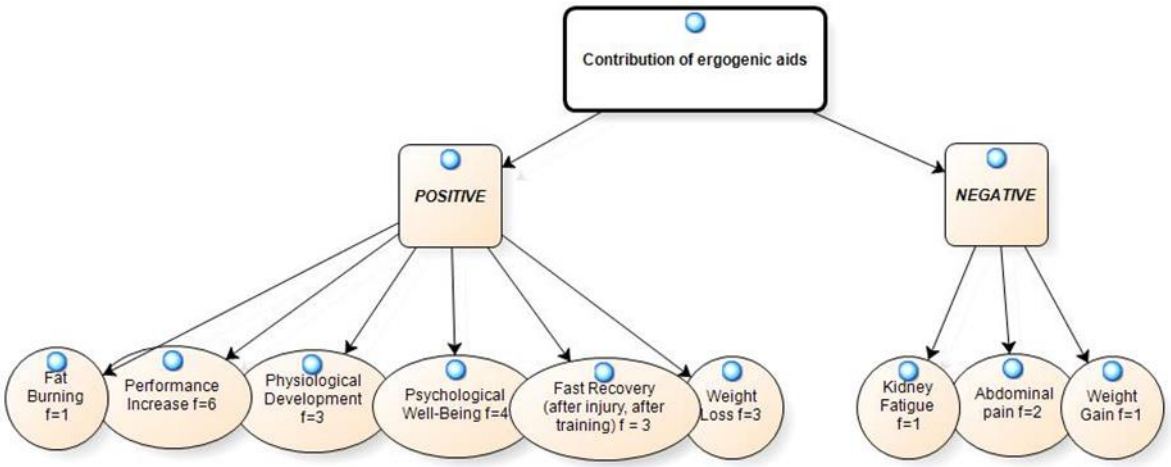

Figure 4. Contrubution of ergogenic aids

As a result of the analysis of the data obtained, in the contribution of ergogenic aids in Figure 4; positive; psychological well-being (P3, P6, P17, P23), fat burning (P1), weight loss (P7, P8, P13), physiological improvement (P12, P14, P15), fast recovery (after training after injury) (P4, P10, P11), performance increase (P5, P9, P16, P18, P19, P22), negative; weight gain (P3), kidney fatigue (P21); abdominal pain (P2, P20).

Some of the participant opinions regarding the codes obtained from the participants regarding the question "Have you seen any benefits or harms of ergogenic aids? Can you explain?" and indicated in Figure 4 are given below.

- *As a harm, sometimes the weight makes us gain weight in the weights because it is our weight judo branch, we may have stopped using it at that time. As I said, the benefit is*

psychologically, maybe it makes me feel good because I use it, but it feels good, that is, it makes me feel good as rested at that moment. Physiologically, muscle contractions are usually caused by muscle contraction after a hard workout, so I feel rested as I said after drinking them, whether it is magnesium or muscle tone (P3).

- *I didn't see any harm, but I saw the benefit of it in training like this, it gave energy, I was very focused, I was doing the movements more easily, I think it gave energy (P12).*
- *I didn't see any harm, but I saw a lot of benefits. It gave me more energy and definitely increased my performance (P18).*
- *I did not see any harm because I always used it in dosage. As for the benefit, of course, vitamins helped me to feel good in my body. Similarly with protein powder, it helped me to get stronger and increase my muscle strength, but I did not see any harm (P23).*

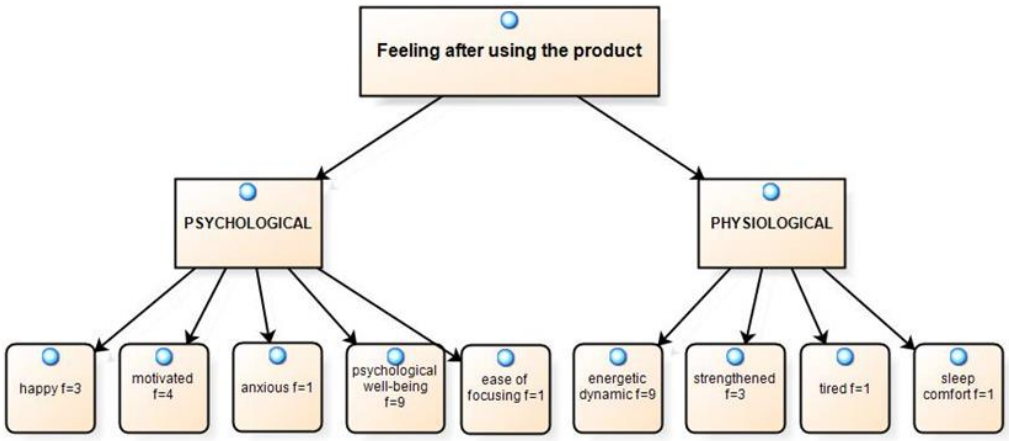

Figure 5. Feeling after using the product

As a result of the analysis of the data obtained, Figure 5 shows that in the feelings after product use; psychological; psychological well-being (P1, P2, P3, P4, P11, P13, P15, P16, P21), motivated (P6, P12, P14, P22), anxious (P7), ease of focusing (P14), happy (P5, P10, P20), physiological; energetic/dynamic (P2, P3, P5, P9, P10, P14, P18, P20, P23), tired (P8), sleep comfort (P9), gained strength (P16, P17, P23).

Some of the participant opinions regarding the codes obtained from the participants regarding the question "Can you explain how do you feel after using the products?" and indicated in Figure 5 are given below.

- *I feel good, nothing much, I just feel some effect, for example, I feel that some products give energy, I feel happy (P5).*
- *When I used the product, I felt very comfortable during the training, as if a power was coming (P12).*
- *I think after I used it, I felt a little bit energized and motivated ready for training because it was psychological. I can say that I was energetic, ambitious, focused on training (P14).*
- *As I said, because I used protein powder, I fed my muscles, so I felt stronger and more vigorous. Vitamins also made me feel better. It made me more energetic during the day, so I didn't suffer from pain (P23).*

DISCUSSION and CONCLUSION

This study aimed to examine the opinions of combat athletes regarding the use of nutritional ergogenic supplements. The results revealed that combat athletes generally use various ergogenic supplements with the coach's recommendation, mostly to improve performance. Dietary supplements are widely used among athletes to enhance performance and accelerate recovery. Although there are existing studies on supplement use rates in elite athletes, studies on a single branch are limited. In this study, it was found that combat athletes mostly used creatine, L carnitine, protein powder and vitamin and mineral preparations. Lun et al. (2012) reported that 87% of athletes used sports drinks, multivitamin and mineral preparations, carbohydrate bars and protein powder in a Canadian study of mostly strength-based athletes. Frączek et al. (2016) reported that athletes consumed isotonic drinks the most among nutritional supplements. Suzic-Lazic et al. (2011) reported that 74.6% of athletes used at least one product and 43.4% used multivitamins. Unlike our study, it has been reported that minerals and vitamins are the most commonly used nutritional ergogenic support products in athlete groups with an average age group of 18 years and younger (Barrack et al., 2022; Braun et al., 2009). Unlike our study, Braun et al. (2009) reported that the most commonly used nutritional ergogenic supplements in elite young athletes with a mean age of 16.6 ± 3.0 years were minerals, vitamins and sports drinks, and the least used nutritional supplements were protein/amino acids, creatine and other ergogenic supplements. In this study, the priorities of ergogenic supplements used varied due to the fact that the average age was below 18 years. In addition, ergogenic support products used according to the characteristics and requirements of the branch vary.

There are important differences between sports branches. Each sport has its own physiological characteristics and requirements, a variable that greatly influences the rate of use of dietary supplements (Baltazar-Martins et al., 2019). Each sport branch has its own physiological characteristics and requirements. When the use of nutritional ergogenic support in athletes is examined, it is seen that the studies were generally conducted on elite athletes competing in different branches in one country. Braun et al. (2009) studied nutritional ergogenic supplements in young German athletes competing nationally and internationally, Lun et al. (2012) in Canadian elite athletes, Oliveira et al. (2023) in Brazilian athletes competing at international levels and in various sports, Sousa et al. (2013) in Portuguese sports. Studies on a single branch are limited. The studies conducted for the branch usually consist of experimental studies. In our study, qualitative research method was utilized in national athletes competing in combat sports and 63.9% of the participants stated that they used ergogenic support products, while 36.1% stated that they did not use ergogenic support products. High percentages of nutritional ergogenic supplement use among athletes have also been reported in other countries mentioned above.

In our study, 54.1% of the athletes who used ergogenic supplements stated that the reasons for starting ergogenic supplements were coach's recommendation, 20.8% were friends' recommendation, 20.8% were individual research and 4.1% were doctor's recommendation. Similarly, in Karadagli's (2021) study on female teakwando athletes, 56.2% of the athletes

received advice from coaches, 6.7% from dieticians, 14.3% from social media, 9.5% from books and 13.3% from friends and relatives, Sousa et al. (2013) reported that 56% of the athletes received nutritional ergogenic support advice from doctors and 46% from coaches. In the study of Braun et al. (2009), since the age group was younger, family was the priority with 34% and advice from coaches with 26%. As mentioned above, coaches come to the forefront in the use of nutritional ergogenic supplements. Therefore, it is important for coaches to have knowledge about the benefits and risks of nutritional ergogenic supplements and to provide good advice and recommendations.

When we look at the frequency of use of nutritional ergogenic supplements, it is seen that 30% of the participants use nutritional ergogenic supplements for less than 1 month, 30% for 1-5 months and 39.1% for 6 months or more. Lun et al., (2012) found that 58% of the participants used daily, 21.6% used several times a week, 17% used weekly, 3.1% used monthly and 0.3% used rarely.

In the present study, when the reasons for the use of nutritional ergogenic support by athletes were examined, it was found that 56.5% used ergogenic support products to increase performance, 21.7% to lose weight, and 21.7% to accelerate recovery. In Sousa et al., (2013) study, 63% of the athletes used ergogenic supplements to accelerate recovery, 62% to increase sports performance and 60% to have more energy/reduce fatigue. In Olievera et al., (2023) study, 76% of the athletes used ergogenic supplements to increase exercise performance and 58.8% to increase muscle mass. In our study, unlike other studies, weight loss has an important place specific to the branch since combat athletes were addressed.

While 83.3% of the athletes participating in our study felt positive effects (psychological well-being, fat burning, weight loss, physiological improvement, rapid recovery, performance increase) after the use of ergogenic supplements, 16.6% felt negative effects (kidney fatigue, abdominal pain, weight gain) after the use of ergogenic supplements. Considering the perceived positive benefits, the reason for the high percentage of supplement use by athletes is evident. It is suggested that nutritional supplements are frequently used for their proposed benefits, while many athletes are largely unaware of the associated scientific research, apparent benefits, risks and side effects of these supplements (Dascombe et al., 2010).

As a result, in our study, it is seen that the national competition athletes use ergogenic support products especially with the recommendation of their coaches to increase their performance. This shows that these athletes do not have sufficient knowledge about ergogenic supplements and do not apply to health professionals in this regard. Therefore, it is important for coaches to have knowledge about the benefits and risks of nutritional ergogenic supplements and to provide good advice and recommendations. It is very important for athletes to choose dietary supplements especially for the physical parameters required by their branch and to receive reliable information about nutritional ergogenic supplements from people specialised in sports nutrition, dietitians, sports physicians. Since the effects of ergogenic supplements vary according to the characteristics of the sports branch, gender and fitness level of the athlete, it is necessary to increase the number of branch-based studies in this field.

Conflicts of Interest: There is no financial or personal conflict of interest on the part of the authors in this study.

Authors' Contribution: Research Design - ND and EAB, Data Collection – EAB, Statistical Analysis - ND and EAB, Manuscript Preparation – ND and EAB.

Ethical Approval
Ethics Committee: Manisa Celal Bayar University Faculty of Medicine Dean's Health Sciences.
Date: 03.04.2024
Decision No: 20.478.48/23339

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