DOI: https://doi.org/10.37547/mesmj-V7-I3-46 Pages: 378-387

MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL

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http://mentaljournal-jspu.uz/index.php/mesmj/index

MODERN STATUS OF NUTRITIONAL BIOCORRECTORS USAGE IN SPORTS: ANALYSIS OF SOCIOLOGICAL SURVEY RESULTS AMONG COACHES

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ABOUT ARTICLE

Key words: nutritional biocorrectors, sports nutrition, coaching expertise, sociological survey, dietary supplements, recovery processes, training efficiency, anti-doping control, nutritional ration, physical performance.

Received: 01.04.26
Accepted: 02.04.26
Published: 03.04.26

Abstract: This article presents a comprehensive scientific and statistical analysis of the results of a sociological survey conducted among 350 coaches in 49 sports disciplines operating in the Republic of Uzbekistan. The primary objective of the study is to evaluate the current practice of using nutritional biocorrectors (dietary supplements) in the training process, and to examine the level of coaches' knowledge regarding the chemical composition, efficacy, and safety criteria of these agents. Systematic analysis and questionnaire methods were employed during the research. The results indicated that the vast majority of coaches (84,8%) advocate for the use of biocorrectors under strict medical supervision; however, a significant portion of respondents (24%) demonstrated theoretical gaps concerning application methodology and dosing. The paper thoroughly analyzes the role of biocorrectors in athlete recovery processes and provides evidence-based recommendations for enhancing the nutritional literacy of coaching staff. The findings substantiate the necessity of developing a unified digital information and methodological platform to optimize the nutrition system in high-performance sports and ensure compliance with anti-doping regulations.

Introduction. In modern high-performance sports, achieving victory is intrinsically linked not only to the intensity of the training process and technical-tactical preparation but also to the mobilization of the body's internal reserves, the acceleration of recovery processes, and balanced nutritional support [2, 8]. Today, nutritional biocorrectors (biological active additives – BAA) are recognized as essential medico-biological tools for enhancing physical performance, strengthening immunity, and optimizing post-exercise adaptation processes [6].

According to the Decree of the President of the Republic of Uzbekistan No. PF-6099 dated October 30, 2020, "On measures for the wide implementation of a healthy lifestyle and the further development of mass sports," the scientific organization of the sports sector and high-quality nutrition for athletes are designated as priority tasks [1]. Nevertheless, in practice, the use of biocorrectors is often carried out without systemic control, scientifically grounded recommendations, or solely based on the individual experience of coaches. This, in turn, creates pressing challenges in the field of sports nutrition.

International experience, specifically the recommendations of the International Olympic Committee (IOC) and the World Anti-Doping Agency (WADA), demonstrates that improperly selected or uncertified biocorrectors can not only negatively impact an athlete's health but also lead to anti-doping rule violations due to hidden prohibited substances [4, 11]. In this context, the coach’s role is invaluable, as the athlete’s daily diet and supplement intake patterns are frequently based on the coach’s recommendations [13]. Therefore, analyzing coaches' perspectives and practical knowledge regarding the use of these tools is the primary stage in addressing existing problems in the field.

Research objective

The primary objective of this study is to conduct a comprehensive assessment of the theoretical and practical knowledge regarding the use of nutritional biocorrectors during the sports training process among coaches of various qualification levels operating in the Republic of Uzbekistan. Simultaneously, it aims to systematically study coaches' attitudes toward the safety of biocorrectors, their compliance with anti-doping criteria, and their impact on athletes' health, as well as to develop a set of scientific and practical recommendations aimed at improving nutritional support for athletes based on the empirical data obtained [7, 13].

Materials and Methods. The research work was organized during October-November 2025 with the participation of specialists working in sports educational institutions and federations at the republican level. As the object of the study, 350 coaches operating in 49 sports (including 22 Olympic and 27 non-Olympic disciplines) were selected.

The following methods were utilized in the study:

1. Socio-psychological survey method: An online questionnaire consisting of 20 targeted questions specially developed for the respondents (based on the Google Forms platform) was applied. The block of questions covered general concepts of biocorrectors, objectives of use, criteria for choosing sources, and anti-doping literacy [11].

2. Statistical analysis: To ensure the reliability of the obtained data, methods of variational statistics and correlation analysis (using SPSS Statistics software) were employed.

3. Comparative analysis: The indicators of local coaches were compared with the standard norms established by the International Society of Sports Nutrition (ISSN) [8, 14].

Analysis of the demographic composition and qualification levels of the respondents showed that 43.4 percent of the participants were specialists with more than 8 years of continuous work experience and extensive practical expertise. This ensures the objectivity of the research results and reflects the real situation in the field. During the research, international pharmacological and nutritional classifications regarding the effect of biocorrectors on the athlete's body were widely utilized [6, 12].

Results and Discussion. The results of the systematic survey conducted revealed a specific landscape of nutritional biocorrectors' utilization within the national sports sector. The obtained data were detailed across several strategic directions:

1. Practice and Structural Analysis of Biocorrectors' Application. According to the research findings, 18.8% of respondents indicated that they recommend biocorrectors consistently during the training process, while 33.7% suggest their use based on specific needs (e.g., during the pre-competition period). This indicator shows that more than half of the coaches consider sports supplements an integral part of the training system [4]. In the hierarchy of the most popular aids, vitamins hold an absolute lead (82%). Mineral complexes (20.2%) and Omega-3 fatty acids (16%) follow in the subsequent positions. This situation aligns with the recommendations of the International Society of Sports Nutrition (ISSN), confirming the significant role of micronutrients in athletes' immunity and metabolism [8].

2. Efficiency Assessment and the Recovery Process. A significant portion of respondents (65.7%) specifically noted the positive impact of nutritional biocorrectors on athletic performance. Notably, nearly half of the participants (47.1%) evaluated these agents as the most crucial factor in accelerating the post-training recovery process [10]. This demonstrates that coaches utilize biocorrectors not only to enhance results but also to protect the functional state of the athlete. It is well-established that without nutritive support for the adaptation

process following high-intensity physical loads, achieving consistently high results and preventing injuries is impossible [12].

3. Safety Criteria and Medical Supervision. One of the most positive indicators of the study is the responsible approach of coaches toward safety issues. 69.4% of respondents consider biocorrectors safe when used correctly (in scientifically grounded dosages). Notably, 84.8% of coaches believe it is mandatory to consult with a specialized sports physician before recommending any supplement [13]. This figure indicates the progressive formation of sports medicine and anti-doping culture in our country, fully aligning with international WADA standards [15].

4. Information Sources and the Necessity of Digitalization. The analysis of information channels showed that a large majority of respondents (64.2%) view qualified doctors and nutritionists as reliable sources. However, a concerning aspect is that 26.8% of coaches still rely on open internet sources (social networks, advertising sites) for information [11]. This situation poses a risk of introducing substances with unknown compositions or those that have not passed anti-doping control into the athlete's diet. Therefore, creating specialized, verified (scientifically validated) online platforms for coaches and digitalizing data in this field is an urgent necessity today.

Statistical Analysis of Research Results.

During the study, the primary groups of biocorrectors recommended by coaches for athletes' diets were identified. The obtained quantitative indicators are reflected in the table below:

Table 1.

Distribution of nutritional biocorrectors by types recommended by coaches (n=350)

No.	Types of biocorrectors	Number of respondents	Percentage (%)
1.	Vitamin complexes	287	82.0%
2.	Minerals (magnesium, zinc, etc.)	71	20.2%
3.	Omega-3 fatty acids	56	16.0%
4.	Proteins and amino acids	37	10.5%

5.	Probiotics	12	3.4%

Note: Since the survey allowed for multiple answer choices, the total percentage exceeds 100%.

Scientific Analysis and Discussion of Table Data:

The indicators in Table 1 demonstrate that vitamin complexes (82%) are the most popular and reliable means among the coaches of our republic. This situation signifies that meeting the increased demand for micronutrients during periods of intense physical loads is a primary focus for coaches. According to the International Society of Sports Nutrition (ISSN), vitamins and antioxidants are of strategic importance in protecting the athlete's body from oxidative stress [6].

At the same time, the results recorded for minerals (20.2%) and Omega-3 fatty acids (16%) show the aspiration of coaches to protect the athlete's cardiovascular system and osteoarticular apparatus. However, the lower-than-expected indicator for proteins and amino acids (10.5%) is noteworthy. This situation can be explained by two factors: first, the coaches' caution regarding the quality and anti-doping safety of these products; second, high confidence in meeting the athletes' protein needs through natural food products [11].

The lowest indicator recorded for probiotics (3.4%) indicates insufficient knowledge among coaches regarding the impact of gut microflora on an athlete's immunity and overall work capacity [13]. Modern research shows that correcting the gut microbiome can increase the recovery rate of athletes [10]. This once again confirms the necessity of organizing specialized nutritional seminars for coaches.

Analysis of Safety and Medical Supervision in the Selection of Nutritional Biocorrectors.

In the subsequent stage of the research, the primary criteria used by coaches in selecting biocorrectors and their subjective views on safety assessment were examined. The results reflect the level of responsibility coaches feel not only for performance but also for the athlete’s health (Table 2).

Table 2.

Coaches' approach to selection criteria and safety assessment of nutritional biocorrectors (n=350)

	Indicators (Criteria)	**Number of respondents**	**Percentage (%)**

Main focus in selection:			
1.	Product quality and composition	201	57.4%
2.	Physician's recommendation	193	55.1%
3.	Athlete's personal desire	18	5.1%
4.	Brand and product price	10	2.8%
Who should assess safety?			
5.	Qualified physician	273	78.0%
6.	Coach themselves	53	15.1%
7.	Athlete themselves	20	5.7%

Scientific Analysis and Discussion of Table Data: The analysis of Table 2 indicates that principles of professional ethics and medical deontology are highly developed among the coaches of our republic. Product quality and composition (57.4%) and physician recommendations (55.1%) were recognized as the most important factors in the selection process. This situation aligns with the principle of "strict liability" promoted by the World Anti-Doping Agency (WADA), as the consumption of low-quality products can negatively impact an athlete's career [5], [11].

Notably, economic factors such as price and brand were significant for only 2.8% of respondents. This confirms that coaches prioritize biological safety over financial economy. Furthermore, the fact that 78.0% of respondents chose a qualified physician as the person responsible for safety assessment demonstrates the increasing integration between sports medicine and coaching activities [12].

However, a comparative synthesis of the data from Table 1 and Table 2 revealed several contradictory situations. Although coaches consider medical supervision a priority (78.0%), the rate of using the internet as an information source (26.8%) remains high. This indicates a "information vacuum" in searching for evidence-based information and a demand for such data in the daily practice of specialists [13]. This situation scientifically justifies the necessity of creating a unified, verified digital medical-methodological resource base in the field of sports, presented in a language understandable to coaches.

Decision-Making Criteria in the Selection of Nutritional Biocorrectors.

In the process of sports training, the coach is not only the designer of the exercise plan but also the primary guiding figure in the nutritional support of the athlete. Therefore, studying the criteria on which coaches rely when selecting biocorrectors became one of the vital components of our research.

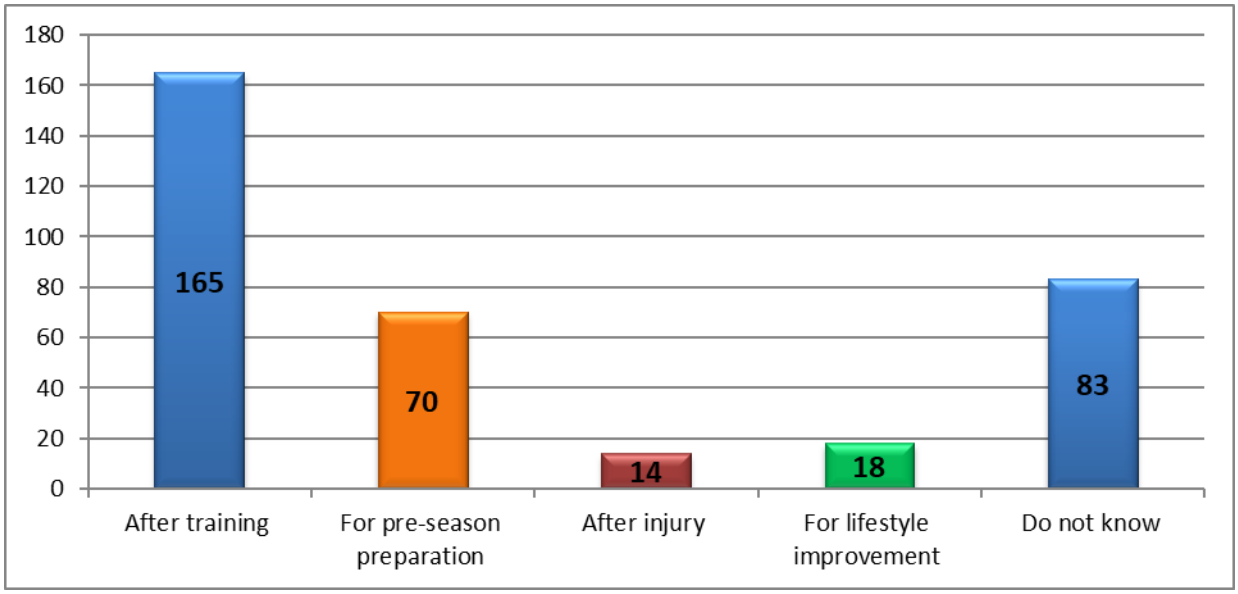

Figure 1. Analysis of coaches' perceptions regarding the necessity and critical conditions for using nutritional biocorrectors (n=350, in %).

(Distribution based on data: After training — 47.1%, For pre-season preparation — 20%, After injury — 4%, For lifestyle improvement — 5.1%, Do not know — 23.7%)

Scientific Analysis:

When respondents were asked in which cases biocorrectors are most essential, the results demonstrated diverse approaches among coaches toward the functional roles of these tools (Figure 1). Nearly half of the respondents, 47.1% (165 participants), consider biocorrectors essential specifically for recovery after training. This indicator confirms that a significant portion of coaches correctly understands the role of supplements in restoring the body's functional reserves.

Furthermore, 20% (70 participants) of respondents consider it appropriate to use these tools during the pre-season preparation period. Notably, a substantial group of coaches—23.7% (83 participants)—remains uncertain ("do not know"). This percentage highlights a high demand for nutritional education regarding the timing and methodology of biocorrectors usage among coaching staff [7, 13].

The remaining respondents rated biocorrectors as important only for improving lifestyle (5.1% / 18 participants) or recovery after injury (4% / 14 participants). These results suggest that most coaches view biocorrectors as situational tools rather than a systemic means of enhancing athletic performance.

Conclusion snd Recommendations. The systematic study and the results of the social survey involving 350 coaches provided an opportunity for an in-depth analysis of the current state of nutritional biocorrectors usage in the national sports sector. Based on the research findings, the following conclusions were reached:

1. Professional Responsibility and Ethics: A high level of professional responsibility and an inclination toward medical supervision regarding the use of biocorrectors were identified among the coaches of the republic. The absolute majority of respondents (84.8%) consider it mandatory to consult a physician before recommending any nutritional supplement, which indicates the formation of a healthy medico-biological environment in the field [1, 15].

2. Functional Approach to the Recovery Process: Nearly half of the coaches (47.1%) consider the use of biocorrectors during the immediate post-training recovery period to be very important. This figure confirms that coaches correctly understand the role of biocorrectors in restoring the body's functional reserves [7, 13].

3. Theoretical Gaps and Information Security: Alongside positive indicators, it is a matter of concern that a significant portion of coaches (23.7%) lacks a clear stance on the critical conditions for biocorrectors usage, and 26.8% of respondents still rely on unverified internet sources. This poses a risk of athletes consuming low-quality products containing prohibited substances and leads to the danger of violating anti-doping regulations [5, 11].

Practical Proposals snd Recommendations

Based on the research results, the following are proposed to improve the system of utilizing nutritional biocorrectors in sports:

1. Scientific-methodological seminars: Organizing regular advanced training courses and scientific seminars for sports coaches and federation specialists on the theme "Modern Sports Nutrition and Anti-Doping Requirements." The primary focus should be on the dosage and biochemical effects of biocorrectors.

2. Digital information platform: Creating a national registry (digital platform) of verified (approved) biocorrectors and sports supplements for coaches under the Republican Scientific and Practical Center of Sports Medicine. This will allow coaches to verify product safety in real-time.

3. Integrated control: Strengthening the tripartite cooperation mechanism between the coach, sports doctor, and nutritionist in monitoring athletes' diets and the consumption of biocorrectors [6, 7].

4. Methodological guidelines: Developing and publishing simplified and scientifically grounded methodological recommendations for the use of biocorrectors, taking into account the specific characteristics of various sports (cyclic, strength-based, team sports, etc.).

The implementation of these measures will not only protect the health of athletes but also serve to bring their effectiveness in international arenas to a new level.

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