

Scientific-Methodical And Biomedical Support Of Athletes In Preparation For The Olympic Games

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Abstract: The article provides information on the main activities of the Republican Scientific and Practical Center for Sports Medicine. It also describes the functional tasks of the members of the integrated scientific group (ISG), the distribution of work between them, ways to solve problems in preparing athletes for the Olympic Games. Methodical recommendations are intended for coaches and specialists of national teams of Uzbekistan, leaders of sports and federations of Uzbekistan.

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Analysis and discussions

As part of the Decree of the President of the Republic of Uzbekistan "On training athletes of Uzbekistan to participate in the XXXII Summer Olympic and XVI Paralympic Games 2020 in Tokyo (Japan)" dated March 9, 2017, under the leadership of the Head of State in the country, systematic work is being done to create the necessary conditions for population to go in for sports, especially children and youth, which in turn serves to ensure a healthy lifestyle for the younger generation.

Successful performance of national teams of Uzbekistan at major international sporting events requires the systematic development of fundamental and applied scientific research, as well as the continuous improvement of scientific and methodological support.

An analysis of the development of sports science in countries that are leaders of the world Olympic movement shows that all major sports powers are paying serious attention to this issue.

The countries - leaders of the world Olympic movement adhere to the doctrine of creating national sports institutes and sports training centers, which study all aspects of the theory and practice of sports and sports training, as well as provide scientific and methodological support for the training of highly qualified athletes.

On the basis of the Decree of the President of the Republic of Uzbekistan dated July 3, 2013 No. PP-1994 on the establishment of the Republican Scientific and Practical Center of Sports Medicine under the National Olympic Committee of Uzbekistan, as well as the Decree of the Cabinet of Ministers of the

Republic of Uzbekistan dated August 15, 2013 No. 226, the Regulations of the Center and the Complex of Measures were approved on the organization of its activities.

The center should become not only the main specialized medical institution carrying out a unified state policy in the field of sports medicine, providing medical-biological and medical-psychological training of athletes, but also the national anti-doping service.

Among the main activities of the Center include:

- conducting research in the field of sports medicine, the development and implementation of standards for the diagnosis and correction of the functional state of athletes;
- study of the effect of drugs, regimen and diet on the physiological state of athletes;
- development and implementation of an effective anti-doping control system;
- development of a program for the creation and use of non-doping funds to enhance their capabilities;
- carrying out work on optimizing the athlete's individual athletic physical activity with regard to planned competitions and training sessions, providing psychological preparation for the competitions, introducing modern methods of selecting young, gifted and promising athletes, and others.

The opening of this scientific center will also allow the integrated one-time participation of sports teachers, physiologists, psychologists, doctors, biochemists using modern instruments and computer equipment in the process of training camps and at the preparation stages will speed up the receipt and processing of information about the condition of athletes, even within one workout. The results of these

studies not only contribute to the possibility of objective information, but also the issuance of final recommendations for coaches, who can promptly make adjustments to the process of preparing athletes.

The structure of research in teams by sports is interconnected with the periodization of training both in the micro cycle and in the long-term planning perspective, which are associated with various types of surveys.

Conducting staged comprehensive surveys (SCS) solves the problem of determining the steady state of preparedness of various body systems of athletes, specifies their level of preparedness, and also allows objectively recommending trends in physical activity planning to coaches, step by step for a specific training period.

Ongoing surveys (OS) are aimed at solving problems related to the systematic control over the current state of body systems and the level of athletes' preparedness regarding the prevention of violations of adaptation processes to loads within one or two microcycles.

Surveys of competitive activity (DSO) are aimed at promptly solving the tasks of managing the condition of athletes in a competitive microcycle, as well as collecting and summarizing information about their opponents.

The purpose of the methodological support of the highest achievements of sport is a comprehensive assessment of the training process and the correction of the special preparedness of athletes, improving their growth through the introduction of innovative tools and methods, as well as providing information and methodological assistance to coaches and athletes.

The main characteristics of the methodical system are its complexity, adaptability (use of modern technical solutions), **specificity, mobility, efficiency, dynamic development** (accumulation and constant expansion of the database), **focus on individualization and practical implementation** (individual assessment criteria and practical recommendations).

Work will be carried out in the following sections:

- evaluation of the training process, the conditions and nature of training athletes;
- diagnosis of the psychological state and psychomotor status of athletes;
- assessment of special preparedness and technical skills of athletes;
- assessment of the health status of athletes;
- informational and methodological assistance on the use of innovative tools and training methods.

As a result of the methodological support of national teams, problems related to:

- improving the system of training highly qualified athletes;
 - providing research on the scientific development and justification of the planning system of the training process and its control;
 - research of new technical and pedagogical means and methods of technical and physical training of Olympic athletes;
 - providing coaches with modern technical means of monitoring and analyzing the training of athletes (including modern training and diagnostic stands);
 - improving the effective and accessible system of medical-pedagogical control of athletes, based on modern information technology;
 - regular assessment of competitive activities at major national and international competitions, as well as the skill of the strongest athletes of the country and the world. Competitions in the system of training highly qualified athletes are not only a means of controlling the level of preparedness, a way to identify the winner, but also the most important means of winning licenses to participate in the Olympic Games;
 - advanced training of trainers on the basis of seminars and conferences inviting leading experts, providing trainers with modern information and teaching materials;
 - the ongoing work of the Integrated Scientific Groups (ISG) with athletes, aimed at a detailed examination of athletes during training camps, with providing trainers with urgent information about the fitness and condition of athletes;
- will be solved.

In order to identify the effectiveness of the training process, focused on improving the quality of training athletes and preventing such negative phenomena as overtraining, overwork and burnout, in the process of preparing athletes, a comprehensive scientific analysis should be carried out in a timely manner through scientific and methodological support of training athletes based on modern achievements of sports science and practice.

The scientific and methodological support for the training of athletes is carried out by the integrated scientific group (ISG) together with the coaching staff.

The main tasks of the integrated research group are:

- prediction of sporting achievements and the development of model characteristics of athletes of national teams;
- selection of athletes in the national team and careful monitoring of their health;
- determination of the functional state of the cardiovascular system and physical efficiency of athletes;
- determination of the special fitness of athletes;

- regulation and correction of training and competitive activities;

The integrated scientific group conducts its work not only to assess the state of training of athletes, but also to ensure timely prevention and correction of identified deficiencies in special physical training and technical and tactical actions, pre-pathological conditions.

Scientific-methodical and biomedical support for the preparation of national teams is carried out by a comprehensive scientific group headed by a trainer for the scientific and methodological work of this national team.

The group includes experts in the following areas:

- teacher-coaches, faculty members, doctoral students, undergraduates and students of the University of Physical Education and the faculties of physical education;

- workers of the medical-biological and psychological cycle: doctors, psychologists, physiologists, biochemists, employees of higher educational institutions, scientific and medical centers, laboratory assistants, etc.;

- programmers, engineers, mechanics.

The composition of the group is formed depending on the specific tasks set by the leadership of the team, and is approved by the leadership of the sports organization to which this team belongs.

The ISG manager is an assistant to the team's head coach and, together with him, is fully responsible for the training of athletes. The head of the AMG is a teacher by specialty, organizes and manages all the work on scientific, methodological and medical support for the preparation of the team, participates in the development of training plans, determining the composition, discussing the results of training and competitive activities, carries out sports intelligence, etc., summarizes and analyzes all the indicators obtained and reports them to the head coach. The rights of the head are determined by the job description for trainers for scientific and methodological work.

The deputy head of the ISG for the biomedical section (physician or biologist (physiologist) by specialty) carries out all aspects of the biomedical control of athletes, the medical support of athletes in the training process and the control of their health. He participates in the development of plans for preparing the national team, discussing the composition, the results of training and competitive activities, analyzes the indicators of health, functional status of athletes and reports the results to the head of the ISG. The rights of the deputy head of the ISG are determined by the job description for the team's medical trainer.

Employees of the ISG (teachers) carry out all the activities on pedagogical support for the preparation of the national team (monitoring the training process, surveying competitive activities, implementing sections of sports intelligence, upgrading previous ones and developing new techniques to improve the skills of athletes, etc.). Analyze the performance of the received sections of the work and report the results of the work done to the head of the ISG.

Employees of the ISG (doctors, biologists (physiologists), psychologists) carry out all the activities on medical, biological and psychological support for the preparation of a national team (health monitoring, improvement measures, examination of the level of functional state; search for new methods for determining the level of functional and mental state etc.). Analyze the indicators of the received sections of the work and report the results to the deputy head of the ISG on the medical-biological and psychological section. Participate in summarizing the scientific, methodological and medical support for the preparation of the team.

Employees of ISG (programmers, engineers) carry out work on the technical support of ISG activities, develop new ones and improve old simulators and equipment for the team and the sports complex.

All ISG activities are carried out in three main directions:

- participation in work and control over the training and competitive activities of athletes;
- improvement of the well-known techniques and development of new ones for improving the sportsmanship of athletes;
- improvement of previous simulators and development of new ones, equipment and computer programs.

The main purpose of the surveys is to collect scientifically based data that allows you to quickly manage the state of fitness of athletes at certain stages of the meso and macrocycle training.

The information obtained makes it possible to identify weaknesses in the physical and functional fitness of athletes and, therefore, to make appropriate corrections to the plan for further training work.

These sections of work are carried out:

- in-depth comprehensive examination;
- step-by-step comprehensive examination;
- current surveys of pedagogical, biomedical and psychological orientation.

Surveys of competitive activities allow us to obtain data characterizing the competitive loads of athletes of different specializations (on the basic, most characteristic parameters). This, in turn, provides an opportunity to accumulate information for the development of model tasks for athletes, as well as

monitor the implementation of model indicators during the competition, keep records of the preparedness of national teams and main rivals, solve sports intelligence tasks, determine trends in the further development of top performance sports, etc.

During the survey of competitive activities, information is collected on the competitive activities of athletes in this particular sport.

If it is necessary to issue express information about the competitive activity of an athlete for a meeting with a future opponent, the obtained information is processed only on the main parameters that are of particular importance for developing a plan for the next meeting.

Equally important is the modernization of generally accepted ways to improve technical and tactical skills.

A special role in this process is given to the development of new methods of improvement, based on the use of special equipment, training devices, allowing to manage the process of improving the skills of highly qualified athletes.

In-depth comprehensive examinations allow you to determine the level of health status (specialist doctors), general functional state and specific psychophysiological qualities characteristic of this sport (visual analyzers, vestibular apparatus, simple and complex motor responses, etc.).

The implementation of this task is carried out in sections:

- methods of collecting information, assessment and criteria indicators of special physical training;
- modernization of the known methods of improving the physical condition;
- reasonable development of the structure of training athletes throughout the macro cycle and its individual stages.

Requirements for the sport of higher achievements are very high and sometimes require the maximum use of all the capabilities of the body of an athlete.

This in turn makes it necessary to look for new approaches to the optimal ratio of training and competitive activities, strictly and justifiably regulate the volume and intensity of training and competitive loads, systematically monitor the level of fitness with the ultimate goal - bringing athletes to the highest level of training.

Stage complex examinations allow to determine the level of a special physical and functional state of athletes in individual training mesocycles.

A stage-by-stage comprehensive examination is carried out in each mesocycle of preparation of the national team in accordance with the approved plan and provides for checking the readiness of athletes at least 4-6 times in a micro cycle.

Ongoing surveys solve the tasks of the operational management of training loads on training camps of the national team, collecting materials describing the training, monitoring the athlete and means of recovery.

Ongoing surveys are biomedical and pedagogical.

ISG members, trainers and the team doctors provide ongoing examinations. The plan of ongoing surveys for a specific training camp is compiled in accordance with the tasks that the senior coach of the team sets for the ISG. Current pedagogical surveys include timing of training sessions.

Timing of training sessions are recorded quantitative and qualitative indicators of the actions of individual athletes for each time period; reflects the nature of the work, the duration and form of the pauses between the individual exercises and parts of the workout, etc. Several employees usually carry out timing and each of them records the actions of athletes. Time tracking is carried out on three stopwatches (on one the total time of training is recorded, and on the other two temporary parameters of work and rest pauses are recorded).

Quantitative and qualitative indicators of the actions performed by individual athletes for a separate exercise are registered, and part of training and training in general, too.

Registration is carried out by 2-4 employees and allows to monitor the effectiveness of the impact of individual exercises and training in general on the improvement of technical and tactical skills of athletes.

Ongoing medical and biological surveys - monitoring the body's response to the proposed load and restoring it after it is provided with:

- clinical and biochemical analyzes of blood and urine before and after exercise, as well as during the recovery period; surveys are conducted on the shock (usually the second) and the last day of the macrocycle;

- cardiological examinations (cardiointervalometry), performed at the level of basal metabolism and characterizing the state of the overall performance of an athlete - the basis of the recovery process; held in the first, in the middle and in the last micro cycles of the training session;

- control by the team doctor (control over the body weight of athletes, special tests to check the frequency of heart rate and blood pressure to the standard load, etc.).

Recovery activities can be divided into three separate groups:

- natural recovery - catering and recreation; the organization of recreation for athletes includes the optimal use of microcycles of various structures at

training camps and outside of them, the correct alternation of training and competition loads in individual mesocycles and the macrocycle in the flail; reasonable time allocation (place and duration) for rest and treatment of athletes in the macrocycle, etc.;

- physiotherapeutic rehabilitation - a system of using the sauna, massage, vibro and hydromassage, electrical stimulation, etc.;

- pharmacological restoration - the system of application of restorative and stimulating drugs.

The most important section of recovery is natural recovery. With a properly organized system of food and rest after training or competitive loads, the specifics of training athletes do not require the mandatory use of pharmacological drugs of various kinds. However, from the second group of means in national teams a sauna should be applied systematically (the sauna must be included on the final day of each micro cycle) and massage (sports massage, vibro and hydromassage) are used according to a specially designed schedule.

In the schedule for the entire training camp and its final part (competition) should be scheduled days of massage for each participant in the collection. Vibromassage (with the availability of opportunities) is used directly during training sessions (both after performing individual exercises and after the end of the load as a whole).

With regard to pharmacological means of recovery, in the practice of the national team should be used systematic vitaminization, as well as individually selected drugs.

As a result of this work, diagnostic tools and methods to improve the efficiency of the training and competitive process in preparing athletes of Uzbekistan for the 2020 Olympic Games will be developed and experimentally substantiated.

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