

Scientific and methodological support in paralympic sports

UDC 796.015



PhD, Associate Professor **S.A. Vorobev**¹

Dr. Hab., Associate Professor **A.A. Baryaev**¹

¹Saint-Petersburg scientific-research institute for physical culture, St. Petersburg

Corresponding author: info@spbniifk.ru

Received by the editorial office on 06.29.2023

Abstract

Objective of the study was to improve the content of the system of scientific and methodological support for Paralympic sports, taking into account the results of application practice.

Methods and structure of the study. The analysis of the practice of using scientific and methodological support was carried out taking into account the accumulated experience of the Saint-Petersburg scientific-research institute for physical culture (FSBI SPbNIIFK), whose employees constantly take part in activities for the scientific and methodological support of the Russian Paralympic teams.

Results and conclusions. An analysis of the practice of applying scientific and methodological support in Paralympic sports shows that when working with Paralympic athletes, it is necessary to use an individual approach in the formation of sports training programs, taking into account the nosological characteristics of athletes. To this end, it is necessary to constantly monitor the means and methods with a comparison of the performed and planned workload. This approach will allow you to make prompt adjustments to the system of sports training.

Keywords: *Paralympic sport, scientific and methodological support, athlete's level of preparedness, system of sports training.*

Introduction. The relevance of improving the system of scientific and methodological support for Paralympic athletes is due not only to a significant number of people with health disorders involved in the system of sports training, but also to a constant increase in sports results in Paralympic sports. Currently, the number of people involved in various types and disciplines of adaptive sports is constantly growing, the program of the largest international competitions in Paralympic sports is being revised. This is due to changes in the sports-functional classification of athletes. The current system of scientific and methodological support does not fully take into account the current trends of the world Paralympic movement. At the same time, the analysis and generalization of the practice of applying scientific and methodological support in Paralympic sports will allow

us to evaluate the effectiveness of innovative testing methods developed at the Saint-Petersburg scientific-research institute for physical culture.

The past Summer and Winter Paralympic Games in Tokyo (Japan) and Beijing (China) have identified the need to improve the system of sports training using the achievements of related sciences, in particular, biomechanics and informatics. This process should take place in addition to the already existing results in the theory of adaptive physical culture, pedagogy, psychology, medicine, sociology and other scientific fields of research in the practice of sports.

Objective of the study was to improve the content of the system of scientific and methodological support for Paralympic sports, taking into account the results of application practice.



Methods and structure of the study. The analysis of the practice of using scientific and methodological support was carried out taking into account the accumulated experience of the St. Petersburg Research Institute of Physical Culture (FSBI SPbNIIFK), whose employees constantly take part in activities for the scientific and methodological support of the Russian Paralympic teams in the following sports: sports of persons with lesions of the musculoskeletal system (LMS), sports of the blind, sports of persons with intellectual disabilities (PID). For the period from 2004 to 2022, employees of the Federal State Budgetary Institution SPbNIIFK took part in 611 events for the scientific and methodological support of the Russian national teams, in which More than 11 thousand athletes took part. So, in 2022, research was conducted on scientific and methodological support in Paralympic sports at 14 events, including 5 Russian championships and 3 Russian championships. The work was carried out taking into account the current structure of scientific and methodological support, including the following types:

- a staged comprehensive examination to determine the level of various aspects of preparedness and the development potential of an athlete at individual stages of training;
- current examination for the purpose of systematic monitoring of the training process;
- assessment of competitive activity to identify the leading competitive characteristics of sports disciplines and analyze the technical and tactical actions of Paralympic athletes.

According to the results of the research, athletes and coaches of the Russian national teams were provided with individual recommendations, additions were made to the database of the studied indicators to create individual sports passports.

Results of the study and their discussion. Scientific and methodological support is carried out by complex scientific groups of the Federal State Budgetary Institution SPbNIIFK using programs that take into account the peculiarities of the calendar plan and the needs of the training system for Russian Paralympic teams in various disciplines. In the course of the work carried out in 2022, complex scientific groups improved innovative complexes for assessing the level of preparedness of athletes, and identified approaches to improving the system of scientific and methodological support. Based on the results of the research, the main methods for monitoring the level

of preparedness were selected, which form the basis for improving the methods used for Paralympic sports.

In the course of the study, the following organizational features of the examination of athletes were identified, related to the nosological characteristics of athletes and the need to provide an "accessible environment" in the places of examination:

- the examination is carried out in the places of training events or competitions;
- mobile examination complexes are used in the work;
- scientific and methodological support is carried out by a group of specialists in various fields;
- an online system for obtaining and processing data is used, which significantly speeds up the conduct of milestone and ongoing surveys, etc.

It was revealed that for the effective organization of scientific and methodological support, the universality of the applied diagnostic complexes is necessary. This will make it possible to organize scientific and methodological support for several sports teams at the same time when they are at a training event at the same sports training base, for example, in athletics (sports of persons with LMS, sports of the blind, sports of PID).

Using modern control methods that record indicators responsible for high sports results, specialists conduct the following types of examination: analysis of training and competitive loads; assessment and analysis of technical and tactical readiness; assessment of speed-strength and strength readiness; determination of the level of special readiness in the preparatory and competitive periods; determination of the level of general preparedness; video analysis, which allows to evaluate biomechanical indicators, technical training of athletes, evaluate the main competitive action and its individual elements; assessment of the functional state; assessment and correction of the psychological state; biochemical analysis [1,2].

The analysis of the practice of using diagnostic complexes in the system of scientific and methodological support of Paralympic sports made it possible to determine the most effective for the comprehensive control of the level of preparedness:

- a complex diagnostic complex for assessing psychomotor readiness indicators in terms of time and space;
- command system "Polar Team Pro" with the use of heart activity monitors, which allows to evaluate the current change in heart rate and identify the level of



adaptation of the athlete's body to physical activity in various training zones;

- a complex of multi-plane computer video analysis of biomechanical and hydrodynamic characteristics of the sports and technical skills of an athlete-swimmer;

- a complex for stabilometry, which allows to determine the coordination abilities of athletes on the basis of tests for balance in static and dynamic form. In the process of dynamic stabilometry, the leading rack is evaluated in changing external conditions;

- a programmable photometer that allows you to isolate blood serum by centrifuging blood samples using a centrifuge;

- a software and hardware complex based on the effect of gas discharge visualization, designed to monitor the psychophysiological state of athletes, control adaptation to various levels of stress and recovery processes in a training event;

- software and hardware systems based on methods for measuring the galvanic skin response in real time to assess the level of psycho-emotional tension of athletes and their ability to self-regulate states [3-8].

At the same time, the use of diagnostic complexes should provide for a mandatory individual approach to Paralympic athletes as part of a scientific and methodological examination, taking into account the specifics of their limited abilities, individual level of sports and psychological readiness.

Based on the results of the analysis of the practice of application, the main tasks in the formation of programs for scientific and methodological support were determined:

- analysis of training and competitive loads, taking into account nosological features and sports disciplines;

- conducting comprehensive surveys of national teams, analyzing the data obtained and comparing them with intermediate targets;

- collection and analysis of data on the level of sportsmanship, physical fitness of the main and reserve teams;

- creation of material, technical and personnel potential for effective scientific and methodological support for the training of athletes of the Russian national teams;

- ensuring the development of guidelines for the introduction into the training process of innovative training technologies and legal acts that ensure the functioning of the system of scientific and methodological support.

Conclusions. An analysis of the practice of applying scientific and methodological support in Paralympic sports shows that when working with Paralympic athletes, it is necessary to use an individual approach in the formation of sports training programs, taking into account the nosological characteristics of athletes. To this end, it is necessary to constantly monitor the means and methods with a comparison of the performed and planned workload. This approach will allow you to make prompt adjustments to the system of sports training.

An important difference in the conduct of scientific and methodological support in Paralympic sports is the need to organize mobile examination complexes with the organization of work for training events or competitions. At the same time, technological support should be based on modern innovative diagnostic complexes that allow minimizing the time of examinations.

References

1. Vorobyov S.A., Baryaev A.A., Mosunov D.F. et al. Modelnyye kharakteristiki urovnya podgotovlennosti v Paralimpiyskikh vidakh sporta [Model characteristics of the level of preparedness in Paralympic sports]. St. Petersburg: FSBI "SPb-NIIFK" publ., 2022. 118 p.
2. Baryaev A.A., Abalyan A.G., Fomichenko T.G. Formirovaniye modelnykh kharakteristik urovnya podgotovlennosti dlya sportsmenov-paralimpiytsev [Formation of model characteristics of the level of preparedness for Paralympic athletes]. Teoriya i praktika fizicheskoy kultury. 2022. No. 3. pp. 20-22.
3. Vinokurov L.V., Lebedeva A.L., Baryaev A.A. Modelnyye parametry tekhniko-takticheskoy podgotovlennosti plovtsov-paralimpiytsev [Model parameters of technical and tactical readiness of Paralympic swimmers]. Adaptivnaya fizicheskaya kultura. 2022. No. 3. pp. 10-12.
4. Banayan A.A., Lashkul A.K. Monitoring psikhofiziologicheskogo sostoyaniya paralimpiytsev na trenirovochnykh meropriyatiyakh po podgotovke k Paralimpiyskim igrām v g. Tokio 2021 goda [Monitoring of the psychophysiological state of Paralympic athletes at training events in preparation for the Paralympic Games in Tokyo 2021]. Adaptivnaya fizicheskaya kultura. 2022. No. 3. pp. 24-25.
5. Golub Ya.V., Ivanov A.V., Baryaev A.A., Gavrilo-va M.P., Korablev S.V. Razrabotka modelnykh



- karakteristik psikhofiziologicheskoy sovmestimosti v komandnykh vidakh paralimpiyskogo sporta [Development of model characteristics of psychophysiological compatibility in team sports of Paralympic sports]. *Adaptivnaya fizicheskaya kultura*. No. 2. 2021. pp. 26-27.
6. Vinokurov L.V., Khalikov R.R., Baryaev A.A., Abramova T.F. Psikhofiziologicheskiye predposylki podgotovlennosti vysokokvalifitsirovannykh dzyudoistov-paralimpiytsev sporta slepykh k sorevnovatelnoy deyatelnosti [Psychophysiological prerequisites for the readiness of highly qualified judokas-paralympians of the sport of the blind for competitive activity]. *Teoriya i praktika fizicheskoy kulturey*. No. 8. 2021. pp. 46-49.
7. Vorobyov S.A., Baryaev A.A. Osobennosti podgotovki sportsmenov na zaklyuchitelnom etape godichnogo trenirovochnogo tsikla dlya uchastiya v Paralimpiyskikh igrakh 2021 goda [Features of training athletes at the final stage of the one-year training cycle for participation in the 2021 Paralympic Games]. *Teoriya i praktika fizicheskoy kulturey*. No. 7. 2020. pp. 48-50.
8. Evseev S.P., Evseeva O.E., Abalyan A.G. et al. *Adaptivnyy sport [Adaptive sports]. Trainer's handbook*. Moscow: OOO «PRINLETO» publ., 2021. 600 p.