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IMPROVEMENT OF THE SYSTEM OF GOALBALL TRAINING ON THE BASIS OF THE COMPLEX CONTROL METHOD

Abstract. The article describes the experience of application of the complex control method in goalball (sport for blind athletes) training. Goalball is a team sport which is a significant element of inclusion of blind people into physical and sports activity. The programs of scientific methods of support developed and introduced into practice of trainings for paralympic sports in 2014 allowed including complex control in many sports disciplines.

At the present moment, the scientific methods support is carried out providing an estimation of dynamics of results of training taking into account the degree of socialization and rehabilitation of the disabled person. Throughout all stages of training in the conditions of training camps and competitions, within the limits of dissertational research, the author examined more than 300 athletes.

The article shows the lines of research which are carried out at each stage of the blind athlete's training. Realization of scientifically relevant complex diagnostic methods of estimation of preparation of visually impaired people allows to improve the system of training in paralympic sports and to improve the results of performance at international and national competitions. The results of the study make it possible to work out the scheme of planning the training process for paralympic athletes of the Russian national goalball team taking into account the training cycles and specific features of the athletes.

Keywords: goalball, sport for blind athletes, sport training system, complex control.

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The modern system of training high-rank athletes is based on continuous increase of volume and intensity of the training load [13]. That is why timely monitoring and analysis of adaptive reactions of the organism and evaluation of its reserve abilities, including athletes with disabilities in the form of visual impairment, are utterly important. This makes it possible to follow up on the dynamics of the processes of organism's adaptation to the training load and to moni-

tor the training process, thus preventing overtraining or adaptation breakdown [15]. The programs of scientific methods of support developed and introduced into practice of trainings for paralympic sports in 2014 allowed including complex control in many sports disciplines. At the present moment, the scientific methods support is carried out providing an estimation of dynamics of results of training taking into account the degree of socialization and rehabilitation of athletes with

visual impairments.

In the context of humanistic ideas and views, the modern society proclaims the priority of development of the personality of man suffering from visual deprivation. Ensuring integration of people with visual impairments in the society by their reaching the maximum level of independence and self-realization is considered to be a major goal of humanization. The researchers of the problem highlight the fact that the all-round development of man in the conditions of visual deprivation, attaining the highest possible level of their personal potential and overcoming or lowering the level of the negative impact of impairments and their aftereffects is possible, provided the favorable conditions of integration in society are created for these people [1; 2; 3; 4; 5; 10; 11].

In order to achieve positive sports results by people with visual impairments, special research defines suitable kinds of sport and the conditions of physical activity facilitating the development of spatiotemporal components of motor activity, coordination, precision and dexterity of movements in combination with monitoring qualitative and quantitative characteristics of the performed movements recommended in view of the vision preserving factors [9; 10; 12; 14].

Goalball is a team sport which is a significant element of inclusion of visually impaired people into physical and sports activity. This game is unique in the fact that it is cultivated as a sport for blind athletes only. The game has been included in the programs of Paralympic Games since

1976. In 2016 the women-athletes of the national Russian goalball team will take part in the Paralympic Games for the first time. This result has been achieved due to the inclusion of elements of complex control into the system of sports training. Since 2010, specialists of the complex scientific research team of Saint-Petersburg Research Institute of Physical Culture have taken part in the process of training athletes of the national Russian goalball team [2; 8].

Throughout all stages of training in the conditions of training camps and competitions we have examined more than 300 athletes. Our research had the following objectives:

- to study the dynamics of the level of physical preparation of athletes with visual impairments;
- to reveal strong and weak points in all aspects of his/her physical training;
- to train athletes for performance at All-Russian and international competitions.

Let us now characterize the complex control application possibilities which are realized in the course of each stage of the blind athlete's training.

Assessment of general and special physical preparation. This stage includes testing with the aim to reveal the level of physical preparation of a person with visual impairments. Based on the obtained results, individual training schedules are worked out. The program of testing general physical preparation in goalball includes the qualifications found in the Federal Standard of Training Blind

Athletes: 60 meters running; 10 x 9 m shuttle running; 1500 meters running; trunk curl; push-up in a prone position; unbending leg at the knee in a standing position with the hip of the active leg parallel to the floor (per minute); back lift in a lying position (in two minutes).

The program of testing special physical preparation in goalball includes exercises on the playground maximally manifesting the game potential of an athlete: throwing ball in various directions (on a straight line, diagonally, etc.); performing defending and attacking actions.

Analysis of the training load at a given stage includes analysis of the athletes' sports diaries, analysis of the training schedules, questioning and interviewing athletes and trainers and pedagogical and psychological observation.

Assessment and analysis of the technical preparation of an athlete. This line of investigation is conducted with the help of the assessment complex of technical preparation of the paralympic athlete, including digital or high-speed video recording.

The given study allows the trainer at each stage to quickly discover the mistakes, first of all, in technical training and to analyze the technique of performing the basic movement for the given sport, its phases and elements, and preliminary exercises.

Assessment of physical capacity and the state of cardiovascular system. Analysis of the state of cardiovascular system is conducted during training with the help of the Polar heart rate monitor. A conclusion about the adapta-

tion of the athlete's organism to the imposed training load and about its reserves in various training zones is made on the results of the undertaken observations.

Assessment of the general psychological state of athletes is effected by means of a psychological test defining the following parameters (characteristics):

1) degree of psychic exhaustion (energetic level);

2) level of aspirations (motivation level);

3) degree of manifestation of depression – degree of subjective emotions appearing on the background of emotional recession;

4) level of sociability – social activity and amiability (extraversion – introversion).

Individual indicators of subjective self-evaluation of athletes (general condition, mood, clear vision of purpose, wish to train, preparation for maximum result, satisfaction with the training process) and situational anxiety (according to Spielberg – Khanin test RX-1) and state motivation (SM) are assessed [1].

Psycho-motor indicators of complex coordination and precision movements. A special uniform module program complex for diagnosing human states is used to define the indicators of motor maintenance of movement by the time, space and exertion parameters and by parameters reflecting the cognitive, motor and vegetative constituents the psychic state. This method is based on the conception of genetic predisposition of man to the performance of certain

actions and movements which can be successfully developed and realized in sports. The method corresponds to the requirements of standardization of the psycho-motor support irrespective of its kind and age and gender of the athletes. What is more, the method allows complex evaluation of precise and quick movements coordination, and observation of dynamic stability of technical performance of the basic sport exercise by the studied parameters: time of a simple motor response; time of response beginning; time of a separate action; maximum rate of action performance; response to time; response to a moving object; perception and reproduction by muscular feeling of linear space value; wrist dynamometry.

The undertaken analysis showed that observation of world-known approaches to the scientific-practical support of the given process in athletes without impairments taking into account the specific peculiarities of social, psychological, bio-mechanical, physiological and medico-biological characteristics of motor activity maintenance in athletes with visual impairments is an obligatory and most important condition of improvement of the system of training for paralympic sports.

The solution of the task of application of the complex control method in the work with people suffering from visual impairments leads to the necessity of working out and using new in-

formation, technological, and computer assisted means and methods.

The use of the complex control method presupposes individual approach to athletes taking into account limitations imposed by their physical impairments and individual level of preparation for the given kind of sport. We believe that the following results should be achieved in the process of preparation of our athletes with visual impairments for the 2016 Paralympic Games in Brazil:

- development of physical abilities and functional possibilities;
- enhanced physical rehabilitation;
- achieving the qualifications in accordance with the training program;
- maintenance of high level sports oriented motivation and socialization of each athlete [1].

In accordance with the results of the conducted research, we defined the model characteristics of various aspects of preparation of the athletes of the Russian national women paralympic goalball team.

We believe that the model characteristics of motor support activity indicators given in Tables 1 and 2 are the most important ones.

The development of model characteristics of motor support activity indicators allowed individualizing the process of training and choice of athletes for attainment of highest sports results.

Table 1

Assessment scales of model characteristics of motor support activity indicators
for women athletes of the Russian National Paralympic Games reserve team

<i>Indicator</i>	<i>Parameters range</i>	<i>Evaluation result</i>
Time of a simple motor response to light	less than 169 m/sec	good
	from 170 to 208	satisfactory
	more than 208 m/sec	poor
Time of response beginning	less than 183 m/sec	good
	from 184 to 221	satisfactory
	более 221 m/sec	poor
Time of a separate action	less than 156 m/sec	good
	from 157 to 196	satisfactory
	more than 196 m/sec	poor

Table 2

Assessment scales of model characteristics of motor support activity indicators
for women athletes of the Russian National Paralympic Games first team

<i>Indicator</i>	<i>Parameters range</i>	<i>Evaluation result</i>
Time of a simple motor response to light	less than 172 m/sec	good
	from 173 to 212	satisfactory
	more than 212 m/cek	poor
Time of response beginning	less than 181 m/sec	good
	from 182 to 225	satisfactory
	more than 225 m/sec	poor
Time of a separate action	less than 149 m/sec	good
	from 150 to 204	satisfactory
	more than 204 m/sec	poor

While analyzing physical capacity and the state of cardiovascular system we divided athletes into capacity zones (from medium to super maximal) and evaluated the speed of heart rate restoration after the load has been lifted.

The given recommendation helped the training staff to define the content of the training work and the process of rehabilitation for each athlete individually.

Assessment of competitive activity of athletes was carried out at all-Russian and international competi-

tions by analyzing game videos. As a result of such analysis, model characteristics of athletes were singled out taking into account the peculiarities of the tournaments.

The basic relevant indicators included the number of throws, number of defense actions, number of goals scored, number of goals conceded and the time the player spends on the play-field. The obtained data can be seen in tables with results of evaluation of competitive activity in men's and women's games (Tables 3&4).

The comparative analysis of re-

sults of the first Russian National Women's Paralympic Games team in goalball and the leading first teams of Europe and the world at international competitions between 2007 and 2015 shows stable gradual progress of the Russian team. In three recent European championships the first Russian National Women's Paralympic Games team reached the finals (2011, 2013,

2015); being second in the 2014 World championship allowed our team to qualify for the 2016 Paralympic Games before schedule.

Thus, the realization of scientifically based methods of complex assessment of various components of preparation of athletes for competitions allows improving the training system of paralympic sports.

Table 3

Assessment results of competitive activity in goalball (women)

<i>Indicators</i>	<i>Indicator value (absolute)</i>		
	<i>«model»</i>	<i>athlete</i>	<i>winner</i>
Number of throws	18	19	19
Number of defense actions	58	60	60
Goals scored	5	5	5
Goals conceded	2	5	5
Time on playfield (min)	20	20	20

Table 4

Assessment results of competitive activity in goalball (men)

<i>Indicators</i>	<i>Indicator value (absolute)</i>		
	<i>«model»</i>		<i>«model»</i>
Number of throws	32	21	28
Number of defense actions	77	66	66
Goals scored	5	4	4
Goals conceded	3	4	4
Time on playfield (min)	20	20	20

The results of our research made it possible to substantiate a planning scheme of training athletes of the Russian National Paralympic Games team taking into account training cycles and individual characteristics of athletes. Further application of the system of training elements including training and rehabilitation events, test

matches, and the complex control system would allow raising the standard of preparation of athletes with visual impairments to playing goalball.

References

1. Almazova, O. V. Izuchenie, obuchenie i vospitanie detey s narusheniyami v razvitiy / O. V. Almazova, A. A. Koroleva // Spetsial'noe obrazovanie. — 2010. — № 3.

2. Baryaev, A. A. Podkhody k sovershenstvovaniyu sistemy sportivnoy podgotovki paralimpiyskogo sporta v razlichnykh sportivnykh distsiplinakh : metod. posobie / A. A. Baryaev, S. A. Vorob'ev, A. V. Ivanov. — SPb. : FGBU SPbNIIFK, 2015.
3. Volkova, I. P. Psikhologiya sotsial'noy adaptatsii i integratsii lyudey s glubokimi narusheniyami zreniya : monogr. / I. P. Volkova. — SPb. : Izd-vo RGPU im. A. I. Gertsena, 2009.
4. Evseev, D. S. Paralimpiyskoe dvizhenie v mire i ego organizatsionno-pravovye osnovy / D. S. Evseev, S. P. Evseev, I. Tsvok // Adaptivnaya fizicheskaya kul'tura. — 2002. — № 4 (12).
5. Zemtsova, M. I. Uchitelyu o detyakh s narusheniem zreniya / M. I. Zemtsova. — M. : Prosveshchenie, 1973.
6. Kantor, V. Z. Otnosheniya lichnosti pri narusheniyakh v razvitii: reabilitatsionno-pedagogicheskiy aspekt / V. Z. Kantor // Spetsial'noe obrazovanie. — 2015. — № 4.
7. Kantor, V. Z. Pedagogicheskaya deyatelnost' v sisteme reabilitatsii lits s narusheniyami v razvitii / V. Z. Kantor // Izv. Ros. gos. ped. un-ta im. A. I. Gertsena. — 2002. — № 3, t. 2.
8. Kornev, A. V. Analiz igr pervenstva i chempionata Rossii po golbolu (sport slepykh) / A. V. Kornev, A. A. Baryaev // Adaptivnaya fizicheskaya kul'tura. — 2014. — № 2.
9. Kruchinin, V. A. Psikhologicheskie aspekty obucheniya orientirovke v prostranstve i mobil'nosti shkol'nikov s glubokim narusheniem zreniya / V. A. Kruchinin, JI. I. Solntseva // Defektologiya. — 1992. — № 3.
10. Litvak, A. G. Psikhologiya slepykh i slabovidyashchikh / A. G. Litvak. — SPb. : KARO, 2006.
11. Nikulina, G. V. Formirovanie kommunikativnoy kul'tury lits s narusheniem zreniya: teoretiko-eksperimental'noe issledovanie / G. V. Nikulina. — SPb. : KARO, 2006.
12. Rostomashvili, I. E. Stanovlenie samosoznaniya v usloviyakh zritel'noy deprivatsii / I. E. Rostomashvili // Sovremennye fundamental'nye i prikladnye issledovaniya. — 2012. — № 4 (7).
13. Rybakov, V. V. Upravlenie sportivnoy podgotovkoy: teoretiko-metodologicheskie osnovaniya : monogr. / V. V. Rybakov, A. I. Fedorov. — Chel'yabinsk : ChGU, 2003.
14. Spetsial'naya pedagogika : ucheb. posobie / L. I. Aksenova, B. A. Arkhipov, L. I. Belyakova i dr. ; pod red. N. M. Nazarovoy. — M. : Akademiya, 2000.
15. Teoriya i organizatsiya adaptivnoy fizicheskoy kul'tury : ucheb. posobie / pod red. prof. S. P. Evseeva. — M. : Sovetskiy sport, 2002.