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Issues of temporary adaptation of weightlifters to different climatogeographical conditions

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Abstract

Purpose: to study the peculiarities of adaptive restructuring of the organism of weightlifters in different climatogeographical conditions and the influence of training factors, physiotherapeutic means and adaptogens of plant origin on these processes.

Methods: Analysis and generalization of scientific and methodological literature, questionnaire survey, instrumental method, pedagogical testing and observation, pedagogical experiment, statistical methods of processing the results.

Results: The work experimentally substantiated training loads in the pre- and post-flight period of training, considered the most effective variants of them in combination with the use of adaptogens of plant origin, contributing to the active course of adaptation processes and maintaining a high level of performance.

As a result of registration of functional indices of weightlifters and new training regimen a positive correlation (p>0,76-0,84) between air temperature, total sunshine on the one hand, and subjective state and body temperature on the other hand was revealed.

Conlcusion: Thus, before departure for competitions and in the period of acclimatization to new conditions of another continent it is necessary to observe a number of organizational and methodical recommendations. By the time of departure it is necessary to bring athletes to a high level of functional state: to take measures to correct weak adaptation links, prevent chronic diseases and increase immunoreactivity.

Keywords: Rational regimen, sleep-wake phase, simple and complex reactions of the nervous system, body temperature, effect, loads acquire paramount.

Introduction

The need to know the regularities of the flow of processes of temporary adaptation of athletes during flights through several time zones to the west or east at the present stage of training is due to the struggle in the international sports arena, which every year becomes more and more severe, therefore, in the training of athletes it is necessary to take into account all its aspects.

"It is known that the physiological functions of the body are subject to fluctuations throughout the day. In humans, more than 300 processes subordinated to the circadian rhythm have been found. Repeatability of processes (their cycles or rhythms) is mostly innate, inherited and has an internal (endogenous) origin, worked out in the process of long developmental evolution". The fact is that modern sport places increased demands on the athlete's body. Sometimes these requirements are on the verge of physiological capabilities of a person. Under these conditions, incorrect organization of the training process, insufficient individualization, underestimation of a sufficient number of factors indicating the negative effect of high latitudes on the state of health can lead to the lack of growth of sports results, the development of pathological conditions. Taking into account the above-mentioned, the assessment of adaptive and vegetative reactions of an athlete to physical load from pedagogical and biological positions, methods of stimulation of adaptation processes to loads acquire paramount importance. To date, there has been accumulated considerable research experience in studying the states of body functions and performance of children, adolescents and adults engaged in sports *(L.S. Dvorkin 2017, Nikitushkin V.G. 2009, Pakov A.V., R.M. Matkarimov 1999; Sivokhin I.P. 2017; Issurin V.B. 2016; Vinogradov G.P., Vinogradov I.G. 2017, etc.)*. A number of actual tasks on creation of the system of complex control over athletes' preparedness have been solved *(Nikitushkin V.G.2009; Suslov F.P. 2017; Platonov V.N. 2019; F.A, Dvorkin L.S., Slobodyan A.P. 2003; Godik M.A., Skorodumova A.P. 2010, etc.)*. The issues of temporary adaptation of athletes are reflected in the works of Jordan F.A. 2012; S.G. *Verkhoshansky Y.V. 2013, V.P. Guba V.P. 2012; Platonov V.N. 2004; N.A. Dyukov V.2016* and others. A significant part is devoted to the study of adaptation of biological rhythms during transmeridial flights and temporary residence of people in other belt-climatic regions *(Gavrilova E.A. 2015; N.A. Aghajanyan, N.N. Shabaturi 1989; Makarova G.A. 2017 and oth-*

ers). Despite the widely conducted research on the study of adaptation processes in athletes, many aspects of this problem have not yet been solved. This primarily refers to the assessment of the influence of climatogeographical factors on the organism of an athlete specializing in a particular sport, assessment of the role of individual-typological adaptive reactions, the account of which is important for predicting sports results and methods of their improvement, individualization of the training process when using stimulation means.

Preservation of high performance and maintenance of functional readiness and fitness level of athletes during transmeridial flights seems to be an important problem for coaches of national teams, so the problem of temporary adaptation remains relevant in sports.

materials. In this scientific article, the opinions of mature specialists in the field of theory and practice of physical education, scientific, theoretical and practical information of specialists in cycling, weightlifting were effectively used. The dissertation, authorship, article, educational and methodological manuals on the topic of this article are analyzed. In total, 5 scientific and methodological sources were studied, 4 of which are foreign, and 9 are local literature. Pedagogical observations were carried out in November and March at all stages of training in the preparation process and at the stages of strength training of young weightlifters in national weightlifting team of Uzbekistan.

Results and discussion

In our study we were based on the methodology

Table 1. Functional indices of weightlifters under changing climatogeographical factors

Functional indicators	Program	Program period (based on flight destination)	
		west	east
Motor response to light and moving object	the reaction is performed with a 40 cm ruler and also with a regular electric stopwatch.	Before the training session	Before the training session
Heart rate, systolic and diastolic blood pressure pulse rate	Wetzler and Boger formula ADsr = 0.42 ADs + 0.58 ADd	Before and after a training session	Before and after a training session
Stange and Genci	Response Rate RR = hsf in 30 sec (post-test) / hsf in 30 sec (pre-test)	Before and after a training session	Before and after a training session
Body temperature (thermomeostasis)	36,8±0,2	Morning and evening before training	Morning and evening before training
Objective and subjective state	Rational regimen, sleep-wake phase, simple and complex reactions of the nervous system	During the day	During the day

Methods

The theoretical analysis was expressed in the search for the problem, its goals and objectives, the object and subject of research, the logical construction of a scientific article, the method of collecting factual material, a theoretical review of the ways of interpreting the collected

of the principles of P.K. Anokhin's (1973) teachings. We studied the influence of climatogeographical factors on the organism in correlation with the specifics of activity, constitutional, age and sex characteristics of athletes. The dynamics of motor function indices, the organization of adaptive restructuring of the organism were shown, the peculiarity of the training pro-

cess from the nature of weather-climatic changes was revealed.

For two years, we conducted studies on highly qualified weightlifters who traveled to international competitions in zones with a time difference of up to 7-8 time zones. In order to maintain high performance while restoring various body functions of weightlifters, we modeled a new training regime of the pre-competition period. It was assumed that changes in the neuromuscular system, a number of vegetative functions and performance of weightlifters at 1.5-2 hour inversion three days before the flight to a remote climate zone will give grounds to recommend a variant of partial displacement of the daily routine in the days preceding the transmeridial flight to the point of competition.

Considering the above, we recorded the following indicators:

1. Motor reaction to light and moving object;
2. Heart rate, systolic and diastolic pressure pulse;
3. Functional tests;
4. body temperature;
5. Special physical qualities and work capacity;
6. Objective and subjective state (sleep, appetite, well-being, physical activity, mood, desire to train, etc.) using questionnaire data, survey, pedagogical observations, etc.

According to the data of complex control, a conclusion was made about the comparison of the selected indicators with the proper values of weightlifters' indicators in the process of training. If it was not observed - adjustments were made to the training program, for example, such as load inversion.

The table below presents the data of functional indices of weightlifters.

During the temporary adaptation of weightlifters, the athlete's regimen and physical activity are of utmost importance. For the first days after the flight, the first night sleep and the first training sessions are important. In this connection it is necessary to immediately adjust to the new daily regime already during the flight, i.e. departure to the West is reasonable in the first half of the day with arrival in the evening. From the next day after the flight it is necessary to strictly subordinate training sessions to the new daily rhythm, i.e. to conduct them during the hours when competitions are planned.

When moving from west to east, temporary adaptation is more difficult and takes longer.

Based on our program the recovery of weightlifters' performance was divided into three stages: the first stage (2-3rd day), during this period the training load (in terms of volume, intensity, mental and coordination tension) was significantly reduced; the second stage was completed in 6-7 days. During this period the athletes' well-being, indicators of their physical performance, functional state of neuromuscular system and especially vegetative functions were actively reorganized; the third stage - 8-10 days. After the whole **time there** was a stabilization of all functional and psycho-physiological functions.

As pedagogical observations showed, all weightlifters tolerated the time zone change well, improving their results by 12-14%.

Conclusion

According to the results of the research it was revealed that temporary adaptation of weightlifters to time zone change is a consequence of the influence of climatogeographical, time zone and other factors.

In the process of the study it was found that the temporary adaptation of weightlifters was much easier (regular flights had an effect). A high level of motivation, emotional boost and psychological mood for a close responsible start played a positive role. During the period of time zone change the level of functional and physical performance in the new conditions significantly increased.

Taking into account the above-mentioned, we proposed the use of adaptogenic means of recovery of athletes' organism. After the expiration of the time period a pronounced adaptation effect in the restructuring of functional indicators of motor performance was found.

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