

12-1-2020

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Recommended Citation

Matkarimov, Rashid (2020) "Questions of temporary adaptation of weightlifters to different climatic and geographical conditions," *Eurasian Journal of Sport Science*: Vol. 1 : Iss. 1 , Article 3.

Available at: <https://uzjournals.edu.uz/eajss/vol1/iss1/3>

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QUESTIONS OF TEMPORARY ADAPTATION OF WEIGHTLIFTERS TO DIFFERENT CLIMATIC AND GEOGRAPHICAL CONDITIONS

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ABSTRACT

Aim: to study the features of adaptive adjustment of the body of weightlifters in various geographical climate conditions and the influence of training factors, physiotherapeutic agents and adaptogens of plant origin on these processes.

Method of research: Analysis and generalization of scientific and methodological literature, questionnaires, instrumental method, pedagogical testing and observation, pedagogical experiment, statistical methods of results processing.

Results: Training loads before and after the migration period of training are experimentally justified, and the most effective options are considered in combination with the use of plant-based adaptogens that contribute to the active course of adaptation processes and maintain a high level of performance.

Conclusions: According to the results of research, it was found that the temporary adaptation of weightlifters to the change of time zone is a consequence of the influence of climate-geographical, time-zone and other factors.

Key words: Weightlifters, inversion, temporary adaptation, time zone, operability, restoration.

I. INTRODUCTION

The need to know the laws of the processes of temporary adaptation of athletes during flights across 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 is becoming more and more rigid every year, therefore, in the preparation 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 during the day. More than 300 processes subordinate to the circadian rhythm were found in humans. The repeatability of processes (their cycles or rhythms) is mostly innate, inherited, and has an internal (endogenous) origin, developed during the long evolution of development."

The fact is that modern sport imposes increased requirements on the athlete's body. Sometimes these requirements are on the verge of human physiological capabilities. Under these conditions, the wrong organization of the training process, its insufficient individualization, underestimation of a sufficient number of factors indicating the negative effect of high latitudes on health can lead to a lack of growth in sports results, the development

of pathological conditions. Taking into account the above, the assessment of adaptive and vegetative responses of an athlete to physical activity from pedagogical and biological positions, methods of stimulating the processes of adaptation to stress are of paramount importance.

To date, accumulated a significant research experience in the study of the state of body functions and efficiency involved in sports of children, adolescents and the adult population (2,5,8). Solved a number of pressing problems by creating a system of comprehensive monitoring of athletes(1-2,6). Issues of temporary adaptation of athletes are reflected in the works of(1,4-5). A significant part is devoted to the study of adaptation of biological rhythms during trans meridional flights and temporary residence of people in other climatic zones(2,7).

Despite extensive research on adaptive processes in athletes, many aspects of this problem have not yet been solved. This primarily applies to the assessment of the influence of climatic and geographical factors on the body of an athlete specializing in a particular sport, the assessment of the role of individual and typological adaptive responses, which are important for predicting sports results and methods for improving them, and the individualization of the training process when using stimulation tools.

Maintaining high performance and maintaining the functional readiness and fitness level of athletes during trans meridional flights is an important problem for national team coaches, so the problem of temporary adaptation remains relevant in sports.

II. METHODS

In our research, we were based on the methodology of the principles of the teaching of P. K. Anokhin (1973). The work studied the influence of climate-geographical factors on the body in relation to the specifics of activity, constitutional, age and gender characteristics of athletes. The dynamics of indicators of motor functions, the organization of adaptive adjustment of the body is shown, the peculiarity of the training process depends on the nature of weather and climate changes.

For two years, studies were conducted on highly qualified weightlifters who went to international competitions in zones with a time difference of up to 7-8 time zones. To maintain high performance while restoring various body functions of weightlifters, we modeled a new training regime for the pre-competition period. It was assumed that changes in the neuromuscular system, a number of vegetative functions and performance of weightlifters with a 1.5-2-hour inversion three days before the flight to a remote climatic zone would give grounds to recommend a partial shift of the daily routine in the days preceding the trans meridional flight to the competition point.

Considering the above, we recorded the following indicators:

1. Motor response to light and a moving object;
2. Heart rate, systolic and diastolic pressure pulse;
3. Vital capacity and functional tests (Stange and Genci);
4. Body temperature;
5. Special physical qualities and performance;
6. Objective and subjective state (sleep, appetite, well-being, physical activity, mood, desire to train, etc.) using personal data, survey, pedagogical observations, etc.

III. RESULTS AND DISCUSSION

In this paper, training loads before and after the migration period of training are experimentally justified, and the most effective options are considered in combination with the use of plant-based adaptogens that contribute to the active course of adaptation processes and maintain a high level of performance.

As a result of registration of functional indicators of weightlifters and a new training regime, a positive correlation was revealed ($p > 0.76-0.84$) between the air temperature, total sunshine on the one hand, and the subjective state and body temperature on the other.

According to the comprehensive control data, a conclusion was made on the comparison of the selected indicators with the proper values of the indicators of weightlifters during training. If this was not observed, adjustments were made to the training program, for example, such a plan as load inversion.

To speed up the recovery of various functions of the body of weightlifters, plant adaptogens were used in the form of rhaponticum, eleutherococcus extract and other means. The table below shows data on functional indicators of weightlifters (Table 1).

During the temporary adaptation of weightlifters, the regime and physical activity of the athlete becomes of the greatest importance. The first days after the flight, the first night's sleep and the first training sessions are important. In this regard, during the flight, you must immediately adjust to a new daily mode, i.e. departure to the West is advisable in the first half of the day with arrival in the evening. From the next day after the flight, training sessions should be strictly subordinated to the new daily rhythm, i.e. they should be held during the hours when competitions are planned.

When moving from West to East, temporary adaptation is more difficult and takes a longer time.

Based on our program, the recovery of weightlifters' performance was divided into three stages: the first stage (2-3 days), 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.

Table 1

Functional indicators of weightlifters when climate and geographical factors change

Functional indicators	Program	Period of the program (depending on the direction of the flight)	
		to west	to east
Motor response to light and a moving object	the reaction is performed with a ruler with a length of 40 cm, as well as using conventional electronic stopwatch	Before a training session	After a training session
Heart rate, systolic and diastolic pressure pulse	Wetzler and Boger formula $Pm=0.42A+0.58Pd$	Before and after the training session	Before and after the training session
Vital capacity and functional tests (Stange and Genci)	The rate of reaction $RR = \text{heart rate for 30 seconds (after the test)} / \text{heart rate for 30 seconds (before the test)}$	After a training session	After a training session
The temperature of the body (thermogenesis)	36.8±0.2	Morning and evening before classes	Morning and evening before classes
Objective and subjective state	rational mode, sleep – wake phase, simple and complex reactions of the nervous system	During a day	During a day

During this period, the health of athletes, indicators of their physical performance, the functional state of the neuromuscular system and, in particular, autonomic functions were actively rebuilt; the third stage – 8-10 days. After all this time, all functional and psychophysiological functions were stabilized.

As shown by pedagogical observations, all weightlifters well endured the time zone change, improving the result by 12-14 %.

IV. CONCLUSION

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

During the study, it was found that the temporary adaptation of weightlifters was much easier (regular flights affected). A positive role was played by a high level of motivation,

emotional recovery and psychological mood for a close responsible start. During the time zone change, the level of functional and physical performance in the new conditions significantly increased.

Given the above, we proposed the use of adaptogenic means of restoring the body of athletes. At the end of the time period, a pronounced adaptive effect was found in the restructuring of functional indicators of motor performance.

Thus, before departure for competitions and during acclimatization to new conditions of another continent, it is necessary to follow a number of organizational and methodological recommendations. By the time of departure, athletes should be brought to a high level of functional condition: take measures to correct weak links of adaptation, prevent chronic diseases and increase immune-reactivity.

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