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FUNCTIONAL STATE OF CARDIAC CYCLE PARAMETERS IN KARATE AFTER MUSCLE OVERSTRAIN

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Annotation
The work carried out studies of the parameters of the cardiac cycle in karatekas up to different ages and different qualifications, where, under the influence of various physical loads, it makes it possible to judge morphological and functional changes that reflect the process of adaptation of the circulatory system to regular physical loads, characterized primarily by the work of the heart at rest and its high performance in various types of work. A pattern of changes in the parameters of the cardiac cycle was revealed depending on the level of fitness (juniors - up to 20 years old), active athletes (up to 35 years old). With different physical loads, different age groups, the R, S, T teeth were the most variable.

Keywords: karatekas, cardiac cycle, different ages and different qualifications, morphological and functional changes, physical activity, R, S, T teeth.

Аннотация
В работе проводились исследования параметров сердечного цикла у каратистов-до разного возраста и различной квалификации, где под влиянием различных физических нагрузок позволяет судить о морфологических и функциональных изменений, отражающих процесс приспособления системы кровообращения к регулярным физическим нагрузкам, характеризующийся, прежде всего работой сердца в покое и высокой его производительностью при работе различного характера. Была выявлена закономерность изменения параметров сердечного цикла в зависимости от уровня тренированности (юниоры - до 20 лет), действующие спортсмены (до 35 лет). При различных физических нагрузках, различных возрастных группах наиболее изменчивы были зубцы R, S, T.

Ключевые слова: каратистов, сердечней цикл, различной квалификации, физических нагрузок, морфологических и функциональных изменений, уровня тренированности.

Introduction

Numerous studies have established that adaptation to FT consists in the formation of a special functional system and the restructuring of the regulatory mechanisms of homeostasis. New neuro-humoral relationships provide cost-effectiveness and efficiency of functions in a specific sports activity [1].

However, a forced training regimen and the participation of poorly trained athletes in competitions can lead to overwork, and then to a breakdown in adaptation. Therefore, in predicting long-term adaptation, it is important to prevent the depletion of the body's functional reserves and the development of physical overstrain [2].

The most important limiting links of adaptation are the cardiovascular system and somatic dysfunction of the musculoskeletal system in athletes during acyclic training of a speed-strength nature.

In this regard, the assessment of the functional state of the myocardium in athletes with chronic physical overstrain and its effective correction is a serious problem for the physiology of sports and adaptive physical culture.

The purpose of this work was to study the features of the electrophysiological activity of the myocardium in qualified athletes of the speed-strength nature of training against the background of chronic physical overstrain and to determine the prospects for using it for its correction: central electroanalgesia and yoga exercises.

To achieve this goal, the following tasks were formulated in the research: 1-to study the features of the ECG status in karatekas with chronic physical overstrain; 2-determine the features of the shifts general and sports performance; 3 - evaluate the possibility of correcting chronic physical overstrain with the help of special physical exercises and instrumental methods.

Organization and Methods of Research

The study involved 20 students of the Tashkent State Academy of Physical Culture specializing in sports karate (1st category -10, kms - 6, ms - 4). All subjects trained 3 times a week for 1.5-2 hours a day. The studies were carried out during the preparatory period of the training process under conditions of relatively complete recovery (before training).

Athletes in the control group (10 people) for the period of the survey did not complain about the psycho-somatic status, had a high level of performance and relatively quick recovery after training.

Athletes of the experimental group (10 people) had signs of chronic fatigue, decreased motivation for intense training. Some of them periodically noted discomfort in the heart area, sleep disturbance, slow recovery after training.

Taking into account the tasks of adaptive physical culture in the cardiac form of chronic physical overstrain, registration of heart rate, blood pressure and ECG in the second standard lead was used as a research method.

It is known that medical control of athletes with overexertion involves the assessment of the adaptive potential of the body at relative rest, as well as when testing general and sports performance.

This methodological approach allows obtaining important information about the real functional state of the body at this stage of adaptation and about the limiting mechanisms that contributed to the development of overvoltage.

The assessment of general physical performance (veloergometer) was carried out in the zone of medium power (heart rate - 150-160 beats / min), duration 7 min. Evaluation of special working capacity was carried out after sparring lasting 10 minutes.

After each load during the urgent recovery period, heart rate, blood pressure and ECG were recorded.

In the athletes of the experimental group, the study of the state of long-term adaptation was carried out at the beginning of the experiment and after the course of rehabilitation.

Rehabilitation

When choosing rehabilitation methods, we were guided by the following considerations.In the practice of sports medicine, a complex of traditional restorative means is widely used. However, given that athletes of acyclic sports are characterized by excessive vegetative support for psycho-physical activity, yoga exercises and the method of central electroanalgesia using pulsed current turned out to be the most adequate [3].

The physiological basis of electroanalgesia is the elimination of foci of congestive excitation by creating cathodic depression in the frontal lobes of the brain (E.M. Kastrubin 2000). This reduces reactive stress, improves psycho-emotional status and, by accelerating recovery, increases physical performance.

Yoga exercises have a similar physiological effect. When choosing a system of exercises, the fact that the specifics of karate technique predisposes to overstrain of the paravertebral tissues of the spine, causing dysfunction of the motor analyzer and slowing down recovery after PT, is also important.

Therefore, comparing the features of traditional methods of physical exercises and evaluating the physiological mechanisms of yoga according to the literature, we assumed that with a cardiac form of chronic physical overstrain, the effectiveness of this system would be higher. It allows, by concentrating attention (with muscle stretching), to limit external perceptions, normalizes psycho-somatic integration and enhances self-regulation of functions [4].

The course of rehabilitation was carried out for 4 weeks. It included 8 sessions of central electroanalgesia and 12 yoga sessions. Before the start of the rehabilitation course, a general briefing was given on the training of yoga exercises and breathing exercises.

Electroanalgesia was performed using the LENAR serial device 2 times a week 2 hours after training. The duration of one session was 30-45 minutes. Electrodes (multilayer gauze pads 4x4 cm2 were moistened with 5% soda solution) were placed in the forehead (cathode) and under the mastoid processes in the neck (anode). The duration of one session was 30-45 minutes.

Individual training was carried out in the morning after waking up 3 times a week. It included a warm-up complex (7 exercises - 10 minutes) and the main complex (15 asanas - 50 minutes).

The results of the surveys were processed using computer programs for calculating statistical criteria, as well as by generally accepted methods of mathematical statistics. The data were

expressed as the arithmetic mean (M) and its standard error (±m). The significance of differences in mean values was judged by Student's t-test (t) [5].

We found that at rest, athletes with overexertion had a tendency to tachycardia and transient hypertension. They have various violations of the ECG status (a symptom of early repolarization, incomplete blockade of the right branch of the His bundle, shortening of PQY, T wave decrease).

The state of disadaptation and tension of regulatory systems is indicated by the centralization of control and an increase in the activity of the sympathoadrenal system. ECG reveals sinus tachycardia, signs of right heart overload, T-wave inversion, and S-T interval shift.

We found that in karatekas with a cardiac form of overstrain, the amplitude of the ECG waves (compared to the control) was reduced by an average of 10-20%. According to the literature, this indicates changes in atrial excitability, ventricular repolarization, blood supply, and myocardial metabolism.

The results of our studies have shown that in a state of disadaptation, FN can aggravate the disorders detected in the initial state, as well as cause disorders that were not previously detected.

So, against the background of a bicycle ergometric load, karatekas with overstrain had a higher degree of tension of regulatory systems, centralization and sympathicotonia. This increased the negative effects in the ECG status (displacement of the electrical axis of the heart, ventricular repolarization, trophism and energy of the myocardium).

Based on the literature data, this can be explained by a violation of the mechanisms of somato-visceral interaction against the background of physical activity.

At the organizational stage of our study in athletes of group 2, we assessed the degree of overstrain as stage II-III a-b. Given that dissociation between test and sports performance is considered a differential sign of stage IIIb, we decided to evaluate the ECG status not only after a bicycle ergometric test, but also after a sparring fight. Comparison of the results of these series of experiments made it possible to obtain information about the overvoltage mechanism. We have found that FN in a stressful situation of a fight caused an extremely sharp increase in atrial excitability, metabolism and blood flow in karatekas with overstrain.

The totality of the obtained data on changes in the ECG status during overstrain allowed us to substantiate the feasibility of using physical (hatha yoga) and instrumental (central electroanalgesia) methods of rehabilitation to correct CFP.

An analysis of the experimental results proves that the 2-week rehabilitation course contributed to the "smoothing" of the negative subjective symptoms of overstrain and a pronounced normalization of all recorded ECG parameters.

Practically important is the fact that the positive effect of CEAN and hatha yoga exercises is manifested both in a state of relative rest and against the background of test and sports physical activity.

Our comparative analysis of the effectiveness of the means of correction we have chosen convincingly shows that the cumulative effect of central analgesia and hatha yoga exercises on the central nervous system, cardio-respiratory pairing and integrative processes in motor and pain analyzers leads to an improvement in the functional properties of the myocardium.

Conclusion

Summarizing the results of the study, the following conclusions can be drawn: Athletes with an acyclic orientation of the training process are characterized by excessive vegetative provision of psycho-physical activity, hypersympathicotonia with a tendency to increase blood pressure and slow down the recovery period.

A forced training regimen often leads to overwork and the development of a syndrome of chronic physical overstrain of the cardiac type. At the same time, the ECG status is characterized by significant changes in electrophysiological processes in the myocardium, its trophism and metabolism.

In athletes with disadaptation, sparring exacerbates shifts in ECG amplitude parameters to a greater extent than bicycle exercise

In athletes with chronic overstrain syndrome, combined correction with the help of central electroanalgesia and yoga exercises has an effective effect on the subjective-objective manifestations of disadaptation.

Textbook for national groups of colleges and universities 61010300 - sports activities (by type of activity); 60111900 - physical education and sports in preschool and primary education; 60310900 - psychology (sports psychology); 60411200 - management (organization and management of sports events); 60412500 - for practical study of the Russian language course in the field of marketing (sports marketing).

The handbook presents closely related grammatical and speech topics that systematize knowledge acquired in secondary schools; to improve reading, listening, speaking and writing skills. A text with a system of tasks has been identified as a teaching unit.

The content of the speech topics directs the teacher to perform not only communicative, but also educational and pedagogical tasks.

References

1. Arutyunyan A.A. Weakening of competitive tension in athletes after verbal psychoregulation. Human physiology. - 2000. - T. 30. - No. 2. - S. 135-137.
2. Baevsky R.M. Forecasting states on the verge of norm and pathology. - M.: Medicine, 1994. - 298 p.
3. Baevsky R.M. Athletes' heart rate. Mathematical analysis of heart rate under stress. - M., 2004. - 221 p.
4. Nozdrachev A.D. Modern methods for assessing the functional state of the autonomic (vegetative) nervous system. Human physiology. - 2001. - No. 6. - S. 95-101.
5. Iordanskaya F.A., Yudintseva M.S. Diagnosis and differentiated correction of symptoms of maladjustment to the loads of modern sports and a comprehensive system of measures for their prevention. Theory and practice of physical. culture, 1999. - No. 1.-S. 18-24.