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CONTENTS

Chernobay L., Vasylieva O., Lenska O., Morozov O., Terentyev V. TO THE ISSUE OF THE MECHANISM OF ADAPTATION DEVELOPMENT TO THE PSYCHOEMOTIONAL STRESS OF TRAINING IN FEMALE MEDICAL STUDENTS OF GENERAL AND SPORTS GROUPS.....	5
Goncharova A. V., Pavlov S. B., Pavlova O. S., Razumovskiy A. N., Kaur A. ADAPTABILITY OF CARDIORESPIRATORY SYSTEM IN NORMOTENSIVE AND HYPOTENSIVE FEMALE STUDENTS WITH DIFFERENT IMPACT OF THE AUTONOMIC NERVOUS SYSTEM SUBDIVISIONS.....	8
Nataliia S. Hloba, Inna M. Isaieva, Irina S. Karmazina, Dmytro I. Marakushin, Oleksandr A. Hloba THE INTERCONNECTION BETWEEN INDIVIDUAL CIRCADIAN RHYTHMS AND EATING BEHAVIOR AS ONE OF MAIN REASONS OF OVERWEIGHT AND OBESITY IN YOUNG PEOPLE.....	12
Maslova N., Maslova Y. RESEARCH OF THE DENTAL STATUS OF MEDICAL UNIVERSITY STUDENTS.....	16
Pandikidis N. I., Stovan A. O. INFLUENCE OF THE ENVIRONMENTAL FACTORS ON THE HUMAN DIABETES.....	18
Alekseienko R. V., Rysovana L. M. THE INFLUENCE OF NATURAL AND SOCIAL FACTORS ON THE VITAL ACTIVITY OF THE ORGANISM IN MODERN CONDITIONS.....	21
Bulynina Oksana, Voytenko Taisiya THE EMPATHIC ABILITY OF KHARKIV NATIONAL MEDICAL UNIVERSITY STUDENTS WITH THE FUNCTIONAL ASYMMETRY OF A DIFFERENT TYPE.....	24
Nadiia V. Hryhorenko, Marina S. Zimina, Stanislav M. Zimin, Maryna N. Kucher PHYSICAL AND CHEMICAL PROPERTIES OF BILE IN DIABETIC PATIENTS.....	28
Dunaeva O. V., Korovina L. D. THE DEPENDENCE OF THE DEGREE OF METEOSENSITIVITY ON THE STATE OF THE CARDIORESPIRATORY SYSTEM AND THE PRESENCE OF PREPATHOLOGICAL CHANGES IN THE BODY IN MEN AND WOMEN.....	32
Dmytro I. Marakushyn, Inna M. Isaieva, Iryna S. Karmazina, Natalia S. Hloba, Elijah Adetunji Oluwasegun, Kateryna M. Makarova FEMALE VS. MALE: DIFFERENCE IN IMMUNE RESPONSE.....	35
Kyrychenko M. P., Marakushin D. I., Shenher S. V., Dunaeva O. V., Bondar O. O. SOME FEATURES OF THE EYE TEST IN PERSONS WHO ARE SYSTEMATICALLY INVOLVED IN SPORTS.....	38
Sokol O. M., Polishchuk T. V., Khorshunova A. M., Kadnai O. S., Volkov I. I. CORRELATES OF AUTONOMOUS NERVOUS AND IMMUNE SYSTEMS AT INTELLECTUAL EXERTION OF MEDICAL STUDENTS IN CONDITIONS OF COMBINED ACTION OF ENVIRONMENTAL STRESSORS.....	40
Hanna M. Zelinskaya, Katerina A. Zelenskaya, Sukhachova I. A., Kovalenko A. A., Yuliya G. Bazyleva FEATURES OF ADAPTATION REACTIONS OF ORGANISM OF STUDENTS, WHICH DEPEND ON THE PRESENCE OF CHRONIC DISEASES IN ANAMNESIS.....	43
Tishchenko A. N., Lisina A. V., Yurkova O. V., Tishchenko M. O. CERTAIN ASPECTS OF ADAPTOLOGICAL INFLUENCES ON THE DEVELOPMENT OF PSYCHOPHYSIOLOGICAL ADDICTION.....	47
Shtrakh Kateryna Vasyliivna, Rak Larisa Ivanivna, Mulenga Natasha, Samuel Arko Addo, Okoronkwo Ugochukwu, Innocentia Awuzie CORRELATION OF STRESS-PROVIDING AND RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEMS AND NT-PROBNP IN ADOLESCENTS WITH RHYTHM DISORDERS.....	49

<i>Маракушин Д. І., Ісаєва І. М., Кармазіна І. С., Глоба Н. С.</i> ВПЛИВ ОКСИЕТИЛЬОВАНИХ НОНІЛФЕНОЛІВ ТА ЇХ ПОХІДНИХ НА СТАН НЕСПЕЦИФІЧНОЇ ІМУННОЇ РЕЗИСТЕНТНОСТІ ЩУРІВ.....	54
<i>Л. М. Дяченко</i> ВІДПОВІДЬ КЛІТИН ЛЕЙКОЦИТАРНОГО РЯДУ НА ВПЛИВ СТРЕС-ФАКТОРІВ ТА МОЖЛИВІСТЬ ЇЇ КОРЕЛЯЦІЇ ПРИРОДНИМИ АНТИОКСИДАНТАМИ.....	60
<i>Vaschuk Mykola A., Sokol Olena M., Khorshunova Anastasiy M., Chernysh Hanna O., Yacenko Alina Yu.</i> ADAPTATION INDEX AND FUNCTIONAL STATE OF CENTRAL NERVOUS SYSTEM IN MEDICAL STUDENTS DURING THE PERIOD OF INTENSIVE LEARNING ACTIVITY.....	67
<i>Ковальов М. М., Чеботенко О. Р.</i> ЯВИЩЕ ЕМПАТІЇ ЯК СПОСІБ АДАПТАЦІЇ ТА ВЗАЄМОДІЇ В СОЦІАЛЬНІЙ СФЕРІ.....	70

SOME FEATURES OF THE EYE TEST IN PERSONS WHO ARE SYSTEMATICALLY INVOLVED IN SPORTS

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ABSTRACT

The paper presents the results of an eye test in athletes of various types of sports specialization and qualification. The study was conducted in 3 stages: the training period, the competition period and the recovery period. Three types of reactions were identified: normotonic, vagotonic, and sympathetic-kinetic. It was noted a moderate impact of psycho-emotional factors on the nature of the determined reactions of autonomic inhibition of the heart. Based on the data obtained, the following conclusions were made: 1) athletes may experience various deviations from the normal type of reaction to the ocular test; 2) the nature of the reactions of the heart to the eye test depends on the nervous and humoral effects on the heart affecting the functional state of this organ in the process of sports activity.

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Introduction. Vegetative processes are an integral part of motor activity. In the process of sports training, a dynamic vegetative stereotype is formed along with the motor dynamic stereotype, which is a complex of conditioned and unconditioned reflexes that regulate the vegetative sphere in accordance with the level of motor activity. If you carry out long-term training of a given or variable intensity, and then change the nature of physical exertion, then for some time the vegetative changes will correspond to the previous work. Thus, in the formation of the integral motor activity, the vegetative component is in some cases more inert than the motor component. Systematic exercise increases the tone of the vagus nerve and enhances cholinergic effects on the heart. However, this often has a pronounced individual character. Moreover, neither sports specialization, nor sports qualification, nor sports experience have a significant impact on this. It should be noted that almost all athletes are more or less exposed to psycho-emotional factors, for example, during the pre-competitive and competitive periods. Psycho-emotional factors can significantly influence the real and emerging vegetative reactions in the process of sports activity.

The aim: to study the dynamics of changes in excitability of the vagus nerve by types of reactions to the ocular test in athletes at different periods of their activity.

Materials and methods Under supervision there were 124 athletes, men, aged from 17 to 25 years. On average, the sports experience was 6-7 years. All athletes had no complaints, they were healthy, they were examined in a sports and sports clinic. From their sports history: there was not a single episode of deviations in the state of health (overstrain, overtraining, the presence of foci of chronic infection in the body). All subjects strictly followed the requirements of the sports and training regime, including the food and water regimes. The achieved sports results were assessed as

satisfactory, good and excellent (32%, 41%, 27%, respectively, of the total number of observed). Athletes were divided into 2 main groups. The main criterion for the distribution was heart rate, regardless of the sport. 66 athletes of the 1st group had a heart rate of 62 to 72 beats per 1 minute. 58 athletes of the 2nd group showed a heart rate in the range of 50-62 beats per 1 minute. The study was conducted in 3 consecutive stages. The first stage of the study was conducted during the training period, the second stage - the competitive (prelaunch reactions) and the third - the features of the recovery period were determined taking into account the sport.

The results of the study and their discussion. The study identified three types of reactions of oculocardiac reflex 1. normotensive at which heart rate was slowing to 10/min, 2. vagotonic – a deceleration rate greater than 10 cuts of 1 minute and 3 sympathokinetic (rhythm is not changed).

According to our observations and sports history data, the normotonic and, less commonly, vagotonic type of reactions was observed most often in healthy and well-trained athletes. It turned out that in athletes with a high tone of the vagus nerve (group 2), the excitability of the vagus nerve was lower than in athletes of the 1st group (with normocardia).

Deviations (sympathetic type) were mainly in the representatives of the 1st group (9 people), in the 2nd group this indicator was detected in 5 people.

The effect of the pre-start condition on the dynamics and nature of the eye test was studied on 22 athletes (11 from each group) who participated in the competition. The data showed that in the prelaunch period, sympathotonic types of reactions are more common (16 cases) than during the usual time of the training period. We attributed this fact to the impact of psycho-emotional factors that increase the tone and excitability of the sympatho-adrenal system.

The recovery period has been studied at 63 athletes for 7 days. It was found that within 1-3 days, the vagotonic type of reactions is more common among athletes of both groups. Then, on day 3-5, we began to observe normotonic types of reactions. This was seen as establishing the balance of the impact of the sympathetic and parasympathetic nervous system on the body of athletes. In general, the recovery period is characterized by the normalization of the functional state of the parasympathetic system. In some cases, after the end of the vagal predominance phase (4-5 days), the activity of the sympathetic nervous system increased again. This was noted mainly in athletes who received an unsatisfactory result during the competition and was considered as a consequence of a negative competitive effect.

Reflex reactions of the heart are a sensitive indicator of the state of the myocardium and its regulatory mechanisms. During sports work, the heart function is activated. Training leads to increased parasympathetic influences on the circulatory organs and on the heart in particular. As a result, their functional reserves increase, without which it is impossible to successfully compete in competitions. The vagus nerve in trained individuals at rest causes significant bradycardia, which leads to myocardial hypodynamia, which is characterized, in particular, by an increase in the resting state of the residual blood volume in the ventricles after their contraction. This is a reserve for increasing systolic blood volume during sports muscular work. With a positive eye test, the amount of acetylcholine and cholinesterase in the blood, in the spinal and suboccipital fluids increases, while in the negative and inverted samples, on the contrary, there is an increase in the sympatine [2]. Consequently, the normal and vagotonic types of reactions should cause changes in the body directly opposite to those that occur with sympathicotonic types of reactions. All reflex reactions of the heart during an eye test are the result of changes in both reactivity and synchronicity in the function of the regulatory mechanisms of the heart, and related metabolic processes in the heart muscle and the state of myocardial receptor devices.

Conclusions. 1. In healthy athletes, various deviations from the normal type of reaction to an eye test can be observed due to functional changes in the body caused by the peculiarities of the training, competitive and recovery processes, especially after heavy physical exertion.

2. The nature of the reactions of the heart to the ocular test will depend on the degree of nervous and humoral effects on the heart, and on the functional state of the heart, its sensitivity to the effects of these regulatory factors.

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