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COMPARATIVE ASSESSMENT OF THE FUNCTIONAL STATE OF THE AUTONOMIC NERVOUS SYSTEM OF WRESTLING ATHLETES

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Abstract
The article presents the results of a comparative assessment of the indicators of initial autonomic tone, autonomic support of activity and autonomic reactivity of the autonomic nervous system of athletes involved in national sports, depending on age.

Key words
autonomic nervous system, national types of wrestling, age aspect, male gender.

Nowadays, one of the priorities of sports medicine is the health of athletes. [1,2,3]. In turn, one of the criteria for health is the athlete's adaptation, tolerance to training loads, and a wide range of adaptive reactions [3,4]. Under the influence of the training process, an active restructuring of neuroregulatory mechanisms occurs, providing adequate adaptive reactions [5-8].

Therefore, it is especially important to study the functional state of the autonomic nervous system of athletes. In athletes, high physical activity and the characteristics of a sports lifestyle cause the development of dysfunction of the autonomic nervous system, which is a manifestation of the formation of prepathological (prenosological) conditions [9,10].

The autonomic nervous system, while maintaining the homeostasis of the body, ensures the physical and mental activity of the athlete. The state of autonomic regulation is of great importance for assessing the health of athletes [11,12,13].

Purpose of the research: to conduct a comparative assessment of the functional state of the autonomic nervous system of athletes involved in national types of wrestling, in terms of age.

Materials and research methods. The study involved 60 male athletes involved in national types of wrestling, aged 17-19 years (average age 17.89±1.01 years). The participants in our study were divided into three groups depending on age: Group I – 20 athletes aged 17 years, Group II – 20 athletes aged 18 years, Group III – 20 athletes aged 19 years.

During the study, autonomic tone, autonomic reactivity, and autonomic support of activity were studied in all athletes. An orthostatic test was performed to assess the state of the sympathetic department and a clinostatic test to assess the parasympathetic department. All obtained results were subjected to mathematical analysis using MS Excel 2016 and Statistika 12.0.

The results of the research revealed age-related features in the functional state of the autonomic nervous system. Thus, in group I athletes, normotonia was observed in 53.7% of cases, vagotonia in 24.2%, sympathicotonia in 13.7%, mixed type in 8.4% of athletes ($p < 0,001$). In athletes of group II, with established normotension, no significant differences were observed with group I. In this group, there was a tendency towards an increase in the number of athletes with vagotonia (34.2%; $p > 0.1$), a decrease in the number of athletes with sympathicotonia (3.8%; $p < 0.02$) and mixed autonomic tone by 4 times. As for

group III, normotonia was recorded in 53.6% of cases, vagotonia in 42.9% of cases, and sympathicotonia in 3.6% (Fig. 1).

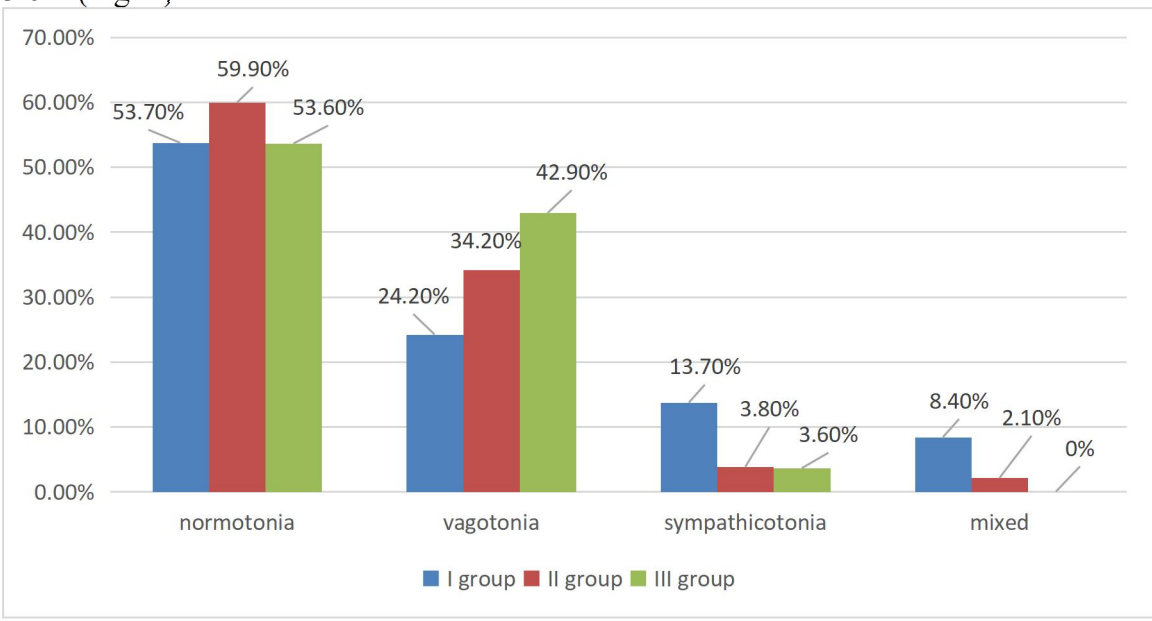

Fig.1. Comparative analysis of the assessment of initial autonomic tone

When studying autonomic reactivity, it was found that in group I athletes, sympathicotonic autonomic reactivity prevailed compared to hypersympathicotonic and asympathicotonic (46.6%, 30.7% and 22.7%, respectively; $p < 0.01$). There were no significant differences in groups II and III.

In group I athletes, sufficient vegetative support for activity was observed in 48.0% of cases. Insufficient vegetative support for activity was recorded significantly less frequently in them - in 20.0% of cases. A third of the athletes in this group showed excessive vegetative support for activity. In group II, there was an increase in the number of athletes with insufficient and sufficient vegetative support for activity (up to 35.7% and 64.3%, respectively). Excessive vegetative support for the activity of this group was not recorded in any case. In group III athletes, sufficient vegetative support for activity was recorded in 44.6% of cases, excessive – in 4.6%, insufficient – in 36.9% and mixed in 13.8% of the subjects.

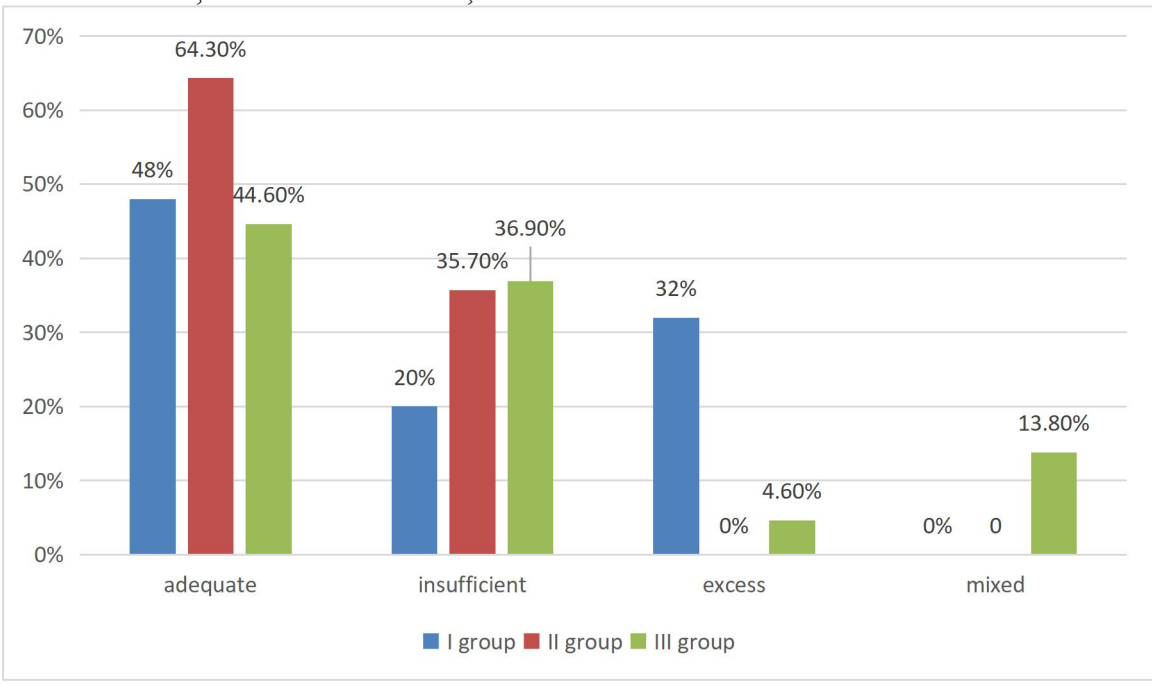

Fig.2. Comparative analysis of indicators of vegetative support of activity

Thus, in older athletes, the normotonic and sympathicotonic variants of autonomic reactivity predominated. At the same time, the established age-related differences in the indicators of the initial

autonomic tone corresponded to the ontogenetic features of the functional state of the autonomic nervous system. In the older age category, an increase in the number of athletes with insufficient and mixed vegetative support for activity and a decrease in the number of athletes with sufficient and excessive vegetative support for activity indicated instability and a decrease in their adaptive capabilities of the body.

Reference:

1. Anoshenkova R. N., Didkovsky A. P., Tatarchenko R. I. The role of medicine in sports, physical rehabilitation and adaptive physical culture // Problems of scientific thought. – 2016. – T. 12. – No. 8. – pp. 54-58.
2. Ravshanova M., Kosimov I. Sportchilar ook bilagi bogimi zharogatlarini erta tiklashda kollaniladigan technologiyalar majmuasi // Journal of Experimental Studies. – 2024. – T. 2. – No. 3. – pp. 96-100.
3. Baratova S., Kim O., Mavlyanova Z. Assessment of anthropometric indicators and harmonious physical development of female athletes // Journal of the Doctor's Bulletin. – 2019. – T. 1. – No. 4. – pp. 40-42. Ermolaeva A.I., Baranova G.A. Autonomic nervous system and autonomic disorders //textbook/AI Ermolaeva, GA Baranova. – 2015.
4. Tokhtiev Zh. B. et al. Features of the cardiovascular and respiratory systems in kurashi athletes // Miasto Przyszłości. – 2024. – pp. 13-16.
5. Burkhanova G., Kim O. Assessment of physical performance of young athletes with increased physical activity // Journal of the Doctor's Bulletin. – 2018. – T. 1. – No. 2. – pp. 25-28.
6. Burkhanova G., Mavlyanova Z., Kim O. The influence of sports nutrition on the physical development of children and adolescents with increased physical activity // Journal of Problems of Biology and Medicine. – 2017. – No. 4 (97). – pp. 24-26.
7. Makhmudov S. Sportchilarni cardiorespirator tizimi faoliyati khususiyatlari //Journal of Experimental Studies. – 2024. – T. 2. – No. 3. – pp. 20-25.
8. Guvakova I.V., Kuznetsova L.A. Violations of the vegetative status in athletes of acyclic sports and their correction using the technology of game biofeedback and transcranial stimulation // Bulletin of Siberian Medicine. – 2010. – T. 9. – No. 2. – pp. 68-72.
9. Mitin M.S. Prevalence and severity of autonomic dysfunction among young athletes // Scientific result. Series Medicine and Pharmacy. 2015. T. 1, No. 2. P. 30-38.
10. Gerasimova L. I., Fedosova A. A. Features of autonomic regulation in individuals with different susceptibility to cold // Human Physiology. – 2016. – T. 42. – No. 2. – pp. 127-133.
11. Korepanova Yu.A. Pedagogical criteria for autonomic disorders in the training system of young athletes // Pedagogical-psychological and medical-biological problems of physical culture and sports. 2016. No. 3.
12. Khudoykulova F.V. et al. the structure, age features, and functions of hormones. pedagogy, 1 (5), 681-688. – 2023.
13. Mamasharifovich M. S., Anatolevna K.I.M. O. Yoshlarda bioimpedansmetriaga asoslangan holda nutrition kholatni bagolash //journal of biomedicine and practice. – 2022. – T. 7. – No. 4.
14. Kim O. A., Sharafova I. A., Baratova S. S. Migren u sportsmenov: osobennosti i metodi korreksii //Bezopasniy sport-2016.–2016.–S. – P. 78-80.
15. Baratova S., Mavlyanova Z., Sharafova I. Study of the temperament of female athletes involved in taekwondo // Journal of the Doctor's Bulletin. – 2019. – T. 1. – No. 2. – pp. 30-32.
16. Umirova S. M., Mavlyanova Z. F., Sabirova Sh B. Rehabilitation measures for protrusion of intervertebral discs of the lumbar spine in athletes engaged in various types of martial arts //Achievements of science and education. – 2019. – T. 12. – №. 53. – C. 68-71.
17. Matmurodov R. J., Umirova S. M. The role of coronavirus infection in the development of diabetic polyneuropathy and its effect on the complement system. Tashkent-2021 //Journal of Biomedicine and Practice. – T. 6.
18. Umirova S. M., Sabirova Sh. B. The use of neuroprotectors in restoring motor functions in patients after ischemic stroke //Ukraine. Health of the nation. – 2020. – T. 2. – No. 3. – pp. 171-173.
19. Mavlyanova Z. F., Ibragimova M. Sh. Cerebral palsy and risk factors for its occurrence // Science and Education. – 2023. – T. 4. – No. 2. – pp. 42-47.