SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 5 | May 2024 - Peer Reviewed Journal

THE INFLUENCE OF PSYCHOEMOTIONAL OVERLOAD ON THE STATE OF THE AUTONOMIC NERVOUS SYSTEM OF ATHLETES

B.B. Doniyorov[1], Z.F. Mavlyanova[2], O.A. Kim[2], A.A. Azimova[2]
[1]Sports School Specialized in Athletics and Sports, Samarkand, Uzbekistan
[2] Samarkand State Medical University, Uzbekistan

ABSTRACT
The purpose of the research - to study the influence of psycho-emotional overload on the development of vegetative dystonia in athletes involved in difficult coordination sports. Materials and methods. We examined 45 athletes aged 11–15 years (average age 13.71±0.67 years) with diagnosed vegetative dystonia syndrome. There were 29 (64.4%) boys and 16 (35.6%) girls. All athletes were divided into two groups: 25 (55.5%) children - with signs and 20 (44.5%) children - without signs of psycho-emotional overload. The control group consisted of 15 healthy children matched by age and gender. The results of the study showed a clear relationship between the psycho-emotional state and the functional status of the autonomic nervous system. Athletes with vegetative dystonia are characterized by increased anxiety, mainly reflecting indicators of personal anxiety.
KEYWORDS. *psycho-emotional overload, autonomic nervous system, vegetative dystonia, athletes, difficult coordination sports.*

The autonomic nervous system regulates the functioning of internal organs and systems, primarily the athlete's heart, which plays an important role in achieving top sports results [1,2].

Often, during long-term training, an athlete experiences stress, which leads to dysfunction of the autonomic nervous system [3,4], one of which is autonomic dystonia. [5]. In addition to psycho-emotional overload, the development of vegetative dystonia is facilitated by somatomorphometric features and hormonal changes [6-9], but their role has not been sufficiently studied.

When identifying vegetative dystonia, the study of heart rate variability is of great importance, with the help of which it is also possible to determine pre-start changes and functional capabilities of athletes and assess the recovery period [3,10]. It should also be taken into account that heart rate is the most striking indicator of deviations arising in regulatory systems that precede hemodynamic, metabolic, energy disorders and may be the earliest prognostic signs of impaired adaptation to psycho-emotional overload during sports training [11,12]

THE PURPOSE OF THE RESEARCH

to study the influence of psycho-emotional overload on the development of vegetative dystonia in athletes involved in difficult coordination sports.

MATERIALS AND METHODS

We examined 45 athletes aged 11–15 years (average age 13.71±0.67 years) with diagnosed vegetative dystonia syndrome. There were 29 (64.4%) boys and 16 (35.6%) girls. All athletes were divided into two groups: 25 (55.5%) children - with signs and 20 (44.5%) children - without signs of psycho-emotional overload. The control group consisted of 15 healthy children matched by age and gender.

Children mainly complained of headaches, dizziness, pain and discomfort in the heart area, rapid heartbeat, a feeling of "lack of air," weakness, fatigue, irritability, a feeling of "crawling goosebumps," anxiety, tremors of the limbs, difficulty falling asleep, insomnia. During examination, tachycardia or bradycardia, the presence of systolic murmur, numbness and/or paresthesia of the extremities were detected; hyperhidrosis; sensory impairment, etc.

All subjects underwent a comprehensive clinical examination with a thorough study of the functional state of the autonomic nervous system, including registration of heart rate, ECG, study of heart rate variability, measurement of blood pressure, functional testing (orthostatic test, Mathinet test), calculation of the Kerdo index, assessment of anxiety on the Spielberg-Hanin scale. Before the research, informed consent was obtained from the parents of the athletes.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 5 | May 2024 - Peer Reviewed Journal

RESEARCH RESULTS

In both groups, despite the fact that the indicators of reactive anxiety were within the acceptable norm, they tended to increase. Moreover, they were more pronounced in group 1 (22.87±4.9 and 27.1±7.9 points, respectively). Indicators of personal anxiety exceeded the norm in both groups (43.5±7.2 and 39.8±9.1 points, respectively). The differences between the children of both groups and the control group are statistically significant in terms of personal anxiety ($p < 0.01$), and between patients in group 1 and the control group - in terms of reactive anxiety ($p < 0.05$) (Fig. 1).

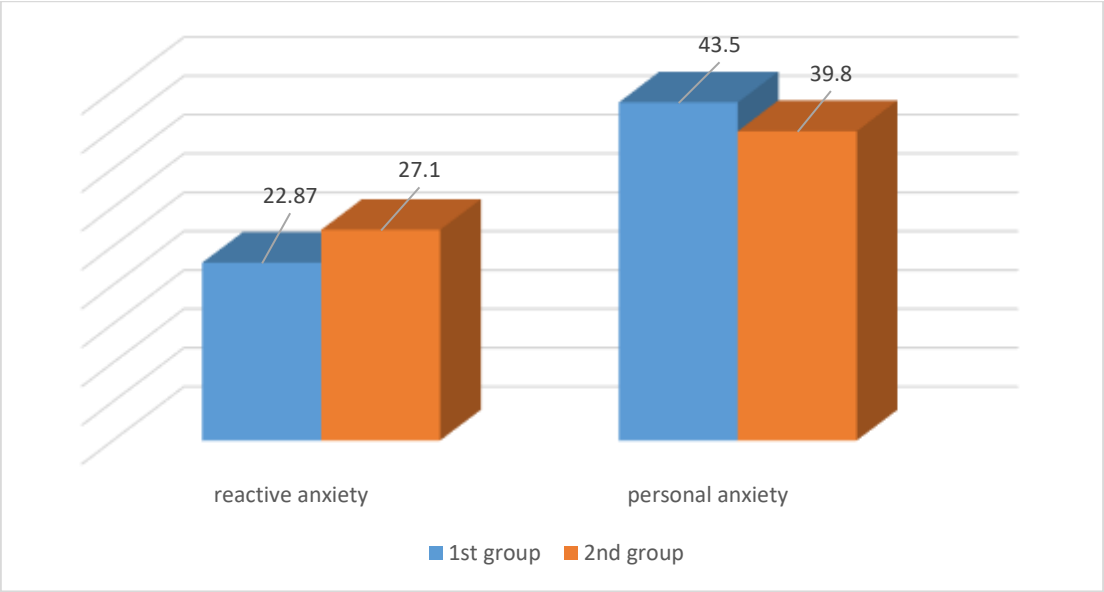

Fig.1. Comparative analysis of anxiety, points

When analyzing the survey results, a direct strong correlation was established: r1 =0.61, r2 =0.7, r3 =0.79, which indicates the interdependence of these indicators.

It can be concluded that the severity of the stressful situation is equivalent for both groups. At the same time, significantly higher values of the studied indicators in patients with severe emotional stress (group 1) indicate a high degree of anxiety, formed under the influence of unfavorable external factors.

When assessing the type of vascular response against the background of functional testing in patients with vegetative dystonia, a predominantly dystonic type of reaction was recorded, more typical for group 1 (60% versus 40%, accompanied by an increase in systolic pressure to 185 mm Hg and a sharp decrease diastolic pressure to "0" (the "infinite tone" phenomenon) (Fig. 2.). In this case, dizziness, general weakness, pallor of the skin, acrocyanosis, severe tachycardia (up to 160 beats/min and above) were observed. The recovery period was 10 minutes or more. Such a reaction to physical activity was regarded as unfavorable.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 5 | May 2024 - Peer Reviewed Journal

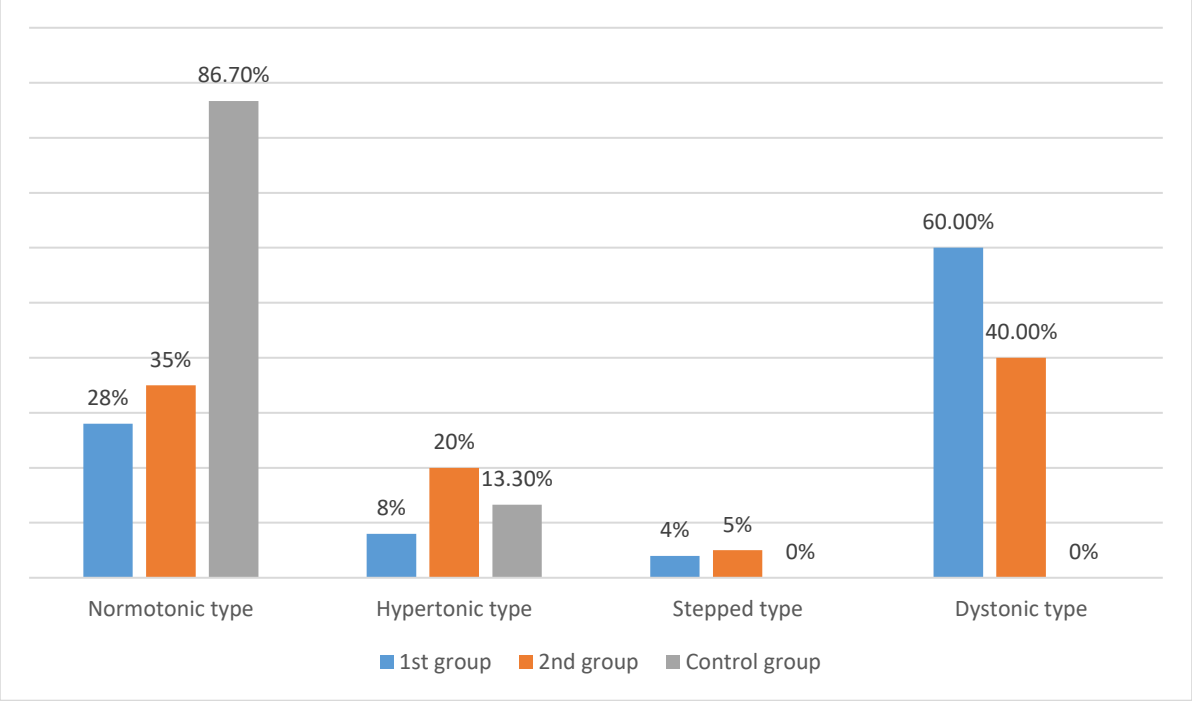

Fig.2. Martin Functional Test Results

When calculating the autonomic Kerdo index, a predominance of the activity of the sympathetic division of the autonomic nervous system was established in both groups, which was confirmed by the results of an orthostatic test, and in the control group the average index values corresponded to normotension.

Thus, the results of the study showed a clear relationship between the psycho-emotional state and the functional status of the autonomic nervous system. Athletes with vegetative dystonia are characterized by increased anxiety, mainly reflecting indicators of personal anxiety.

REFERENCES

1. *Markov K.K. et al. Features of autonomic reactivity in athletes with different orientations of the training process // Fundamental Research. 2015;2(19):4304-4308.*
2. *Popova M. A. et al. Functional state of the autonomic and central nervous system in persons involved in extreme sports // Modern problems of science and education. 2013; 3:329-329.*
3. *Mitin M. S. Prevalence and severity of autonomic dysfunction among young athletes // Scientific results of biomedical research. 2015; 2 (4):30-38.*
4. *Burkhanova G., Kim O. Assessment of physical performance of young athletes with increased physical activity // Journal of the Doctor's Bulletin. 2018; 1 (2):25-28.*
5. *Zhuravlev A.K. et al. Autonomic tone and regulation of the circulatory system in athletes during stressful situations and prevention of arrhythmias // Living Psychology. 2017; 4 (3):231-240.*
6. *Mavlyanova ZF, Makhmudov SM, Tokhtiev ZhB. Morphofunctional status and dynamics of physical fitness of persons involved in the national sport of kurash. Journal of Biomedicine and Practice. 2022;7(1).*
7. *Baratova S., Kim O., Mavlyanova Z. Assessment of anthropometric indicators and harmony of physical development of female athletes // Journal of the Doctor's Bulletin. 2019; 1 (4): 40-42.*
8. *Baratova S., Mavlyanova Z., Kim O. Study of the typological characteristics of athletes of different specializations // Journal of Problems of Biology and Medicine. 2017; 1 (93):36-37.*
9. *Khudoykulova F.V. et al. the structure, age features, and functions of hormones. teacher, 2023; 1 (5):681-688.*
10. *Pak E. A., Mavlyanova Z. F., Kim O. A. Indicators of the state of the cardiovascular system in children involved in karate // Sports medicine: science and practice. 2016; 6 (1):21-25.*
11. *Makhmudov S. Performance and endurance of swimmers, functional indicators // Journal of Experimental Studies. 2023; 1(6):18-24.*
12. *Makhmudov S. Suzish bilan shugullanuvchi sportschilarning zismoniy ish kobiliyatining uzig hos hususiyatlari // Journal of Experimental Studies. 2024; 2 (3):84-89.*