

Changes in physiological parameters in water sports athletes
under the influence of physical activity and taking herbal tea "Monomakh"
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SUMMARY

Carried out examination 30 athletes-swimmers 12-22 years
physiological and bacteriological methods. The athletes have sympathicotonia, i.e. underrecovery, possibly due to dysbacteriosis and endoecological intoxication, which occurs with an increase in physical activity during the training period. While taking herbal tea "Monomakh", a decrease in the level of sympathicotonia, elimination of symptoms of impaired appetite, constipation, diarrhea, a decrease in the frequency of detection of fungi of the genus *Candida*, enterococci and lactose-negative *Escherichia coli* and coccal flora were found. The results of the research allow us to recommend the appointment of herbal tea "Monomakh" to athletes-swimmers during the training period.

Key words: dysbiosis, sympathicotonia, herbal tea "Monomakh", physical exercise.

Introduction

Technogenic and environmental disasters, infectious diseases, the expansion of low-quality medicines and food, alcoholism and drug addiction, psycho-emotional stress and many other factors deplete the body's defenses, reduce its adaptive potential. Many diseases are initially associated with metabolic disorders caused by changes in the composition of the human microflora. In trauma, stress, severe operations, poisoning with poisons, antibiotic therapy and chemotherapy, anesthesia, adverse environmental conditions, depression, physical exertion, the composition and number of microorganisms inhabiting the body normally changes as a result of the development of dysbiosis [6]. At the same time, the number of infectious diseases, including intestinal, skin and respiratory diseases, is increasing. occupying a leading position in the structure of human morbidity [7] and athletes, in particular [8]. Physical activity in some athletes causes sympathicotonia (underrecovery) [3].

The absence of specificity in dysbiotic disorders observed under the influence of various extreme situations was established. At the same time, emotional stress plays a special role in the "triggering mechanism" of dysbiotic restructuring of microflora in extreme conditions [4]. The formation of dysbiosis is observed on all mucous membranes. Shifts in the composition of the intestinal microflora are characterized, first of all, by a decrease in the number of bifidobacteria, followed by an increase in the number of opportunistic and pathogenic microorganisms [5]. Violation of evolutionarily developed

harmonious relationships between individual representatives of the microbial ecosystem, as a result of environmental changes, and an increase in the role of stress factors lead to a weakening of the natural ecological barrier and a decrease in the colonization resistance of microorganisms with the subsequent development of various pathological conditions.

All this necessitates the search for means of restoring full-fledged physical activity in athletes who have been exposed to toxic effects for a long time. Professional swimmers spend at least 4 hours daily in chlorinated pool water throughout the years of sports. Constant exposure to chlorinated water causes specific medical problems, including the development of dysbiosis [1, 2]. Chlorine primarily affects the nasal mucosa and respiratory tract. The reflex effect of chlorine on the mucous membranes of the trachea and bronchi, heart, respiratory and vasomotor centers was also noted [7].

From the literature it follows that pathological hypertrophy of the lymphoid nasopharyngeal ring in 90–95% of junior swimmers of the national team attracts special attention as a manifestation of professional medical pathology caused by contact with chlorinated water and waterlogged air enriched with chlorine, as well as systematic cooling in water [2, 8]. Changes in the functional systems of the body of athletes against the background of taking phytocompositions have been little studied.

The purpose of the work appeared grade changes physiological and the bacteriological status of athletes 12-22 years old during long-term training in swimming pools against the background of taking the purifying herbal tea "Monomakh" for 10 days.

Materials and research methods

A total of 30 athletes were examined at the age from 12 to 22 years old with the experience of sports swimming from 3-10 years. The physiological status was assessed: blood pressure, pulse, Kerdo index ($1 - \text{DBP} / \text{pulse} \times 100$) were determined and a scatological study was carried out.

Table 1

Distribution of athletes by age and gender

Возраст	Пол		Всего	
	муж- чины	жен- щины	Абсолютное количество	%
12–14 лет	–	12	12	40
15–18 лет	–	8	8	26,6
19–22 лет	5	5	10	33,3
Всего	5	25	30	100

The diagnosis of dysbiosis was established on the basis of clinical symptoms: weakness, muscle pain, tongue lining, changes in appetite, dyspeptic disorders of the stool (constipation or diarrhea) and subsequent bacteriological examination.

Athletes of the main group (16 people) took herbal tea "Monomakh"

Instantly dissolving (registration number of the Ministry of Health of the Russian Federation No. 77.99.10.919.B.000389.08.03) in the form of an infusion once a day for 10 days. Sportsmen of the control group (14 people) did not take herbal tea.

Results and its discussion

When studying the physiological status, we revealed sympathicotonia in all female athletes of the water sport. Before training, athletes from 12 to 22 years old showed moderate sympathicotonia (Kerdo index up to +20), and after physical exertion, the level of sympathicotonia increased (Kerdo index up to +40). Reception of herbal tea contributed to a decrease in the level of sympathicotonia to the initial figures determined by us in athletes after rest (Kerdo index +20). In men aged 19-22, after rest before training, there is parasympathicotonia (recovery) Kerdo index -14, after physical exertion, moderate sympathicotonia was observed (Kerdo index +20). The intake of herbal tea among the athletes of the main group contributed to a decrease in the level of sympathicotonia to the initial values.

Thus, the use of herbal tea contributes to the restoration of disturbed vegetative balance in all athletes, women and men.

Evaluating the general condition of athletes by the symptoms indicating dysbiosis (Table 2), we found that they are detected in 18.7–56.3% of cases. Tongue obstruction was noted in 56.3% of athletes, in 37.5% of cases - fatigue. In 31.2% of cases, there were abdominal pain and impaired appetite, flatulence, nausea and muscle pain, diarrhea was observed in 25% of cases, constipation - in 18.7% of cases.

table 2

The frequency of occurrence (in%) of symptoms of dysbiosis in athletes of water kind of sport

Симптомы	Основная группа (n = 16)		Контрольная группа (n = 14)	
	До тренировки, %	После тренировок, %	До тренировки, %	После тренировок, %
Усталость	37,5	18,75	42,8	35,7
Боли в мышцах	37,5	18,75	21,4	21,4
Обложенность языка	56,25	25	57,1	57,1
Диспепсический синдром:				
нарушение аппетита	31,2	–	28,5	28,5
тошнота	37,5	–	42,8	42,8
метеоризм	37,5	12,5	28,5	28,5
запор	18,75	–	50	50
понос	25	–	35,7	35,7
боли в животе после еды	31,2	12,5	28,5	28,5

Studying coprocultures (Table 3) revealed fungi of the genus *Sandida* in 53.3% of athletes, enterococci - in 33.3%, lactose-negative *E. coli* - in 13.3% of athletes, which indicates dysbiosis.

Table 3

The frequency of occurrence (in%) of a certain intestinal microflora in athletes under the influence of physical activity and taking herbal tea

Показатели	До начала тренировок и приема фиточая (n = 30)	После тренировок (через 10 дней)	
		Основная группа (n = 16)	Контроль-ная группа (n = 14)
Грибы рода кандиды	53,3	12,5	28,5
Энтерококк	33,3	6,25	35,7
Кокковые формы	13,3	6,25	14,2
Бифидобактерии	13,3	12,5	14,2
Лактобактерии	36,6	25	28,5
Лактозонегативная кишечная палочка	13,3	6,25	14,2

Under the influence of physical exertion and the use of herbal tea, the main symptoms of dysbiosis were eliminated: constipation, diarrhea and impaired appetite. Other symptoms began to be detected 2–4 times less often, which was not observed in the control group (who did not take herbal tea). Consequently, the decrease in the symptoms of dysbiosis and the frequency of detection of fungi of the genus *Sandida* (4 times), enterococci (5 times) and lactose-negative *E. coli* and coccal flora by 2 times indicates the need to use herbal tea "Monomakh" by swimmers during the training period to eliminate the causes and the consequences of dysbiosis, which prevents the development of recovery processes in the body. Endointoxication arising in athletes due to the enhancement of the lymphatic drainage effect during physical activity and the negative influence of chlorine increases the level of sympathicotonia. Perhaps,

conclusions

1. Physical activity increases the level of endointoxication of the body, which is determined by an increase in the level of sympathotonia in the control group of athletes; the presence of symptoms of dysbiosis in athletes-swimmers in 53% of cases and a violation of the normal composition of the intestinal microflora in 56.3% of cases.

2. Antihomotoxic therapy by using phytocomposition "Monomakh" during the training period of athletes in the pools helps to restore:

- physiological status (decrease in sympathotonia to the initial level);
- bacteriological status (normalization of the microflora composition intestines and a decrease in the symptoms of dysbiosis).

3. For the correction of dysbiosis and activation of recovery processes it is recommended to use the herbal tea "Monomakh" for athletes-swimmers during the training period.

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