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The State of Periodontal Tissues in Athletes Engaged in Cyclic Sports

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Numerous studies have shown that dental diseases in athletes occupy a leading position compared to any other, and it is explained, of course, by their greatest prevalence. [1,2] At the same time, the conducted studies indicate the extreme importance of the somatological link in the system of medical support for athletes.As you know, intense physical activity leads to an increase in almost all dental diseases. The main reason for the increase in the frequency of dental morbidity in athletes is exorbitant physical, including: competitive, as well as psycho-emotional overstrain, suppressing both the local immunity of the cavity and the general reactivity of the body [6,7]. This, in turn, is complicated by a violation of protein and electrolyte metabolism, a shift in the acid-base balance in relation to metabolic acidosis with respiratory alkalosis. Reaction data in combination with depression of immunity leads to vozrastaniyu the acidity of the saliva, creating conditions for the demineralization of tooth enamel, increased microbial metabolism of the mouth, sensitization, reduction of blood flow in sunnycheetah due to its improvement in working bodies [3,4].An important factor leading to an increase in dental morbidity in athletes [1,7] is the predominance of oral respiration during intensive training loads. A study conducted at rsufksit within the framework of the athletes ' health monitoring program identified 380 athletes of various specializations aged 17-23 years with the presence of caries out of 1587, which was 24%. The study included athletes of cyclic, game sports and representatives of martial arts. Caries of the contact (approximal) surfaces and significantly anterior-cervical caries were mainly observed. Almost all stages were present:spot stage, superficial caries, medium caries, and deep caries. A number of factors affecting the development of caries in athletes were also studied, including diet, assessment of local dental protection, socio-economic factors and the role of traumatic dental lesions. There is a particular negative effect of excessive physical exertion on periodontal tissues [2,4], to the extent that athletes with

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undetected periodontal pathologies experienced bleeding gums after intensive training.Periodontal pathology in athletes is more often represented by gingivitis and periodontitis, and it is most common among athletes engaged in water and winter sports,the least among those engaged in power and game sports.An interesting fact is the almost complete absence of periodontal disease in athletes. Apparently, it is explained by the young age of the athletes of the population. The absence of pain syndrome is often one of the features of the course of oral diseases in athletes, which leads to untimely sanitation of the oral cavity and chronization of odontogenic foci. This type of damage often occurs without symptoms and leads to the occurrence of not only periodontal diseases, but also functional functional disorders in the form of hypertonus of the masticatory muscles of the maxillofacial region, dysfunction of the temporomandibular joint, increased erasability of hard tooth tissues, the formation of wedge-shaped defects.In this regard, there is a need to increase the role of prevention of major dental diseases in athletes engaged in cyclic sports, by developing a rational set of measures and means, aimed at improving the quality of life and the level of dental health in this category of persons.

Currently, it is proved that timely prevention of pathological conditions of the dental system can ensure the preservation of the quality of life and health. Based on the above, the purpose of this study was to assess the level of dental morbidity of athletes engaged in cyclic sports, and to develop methods for its effective prevention.

Material and methods of research

In the period from 2018 to 2019, a dental examination was conducted of 230 athletes of various levels of training engaged in cyclic sports, at different periods of the training cycle, aged 18-25 years, the average duration of sports experience was 5.7 ±1.12 g.

At the beginning of the study, the study participants were surveyed using a developed specialized questionnaire, the analysis of which resulted in information about acquired sports injuries of the maxillofacial region of athletes, oral hygiene, and somatic diseases. In subsequent studies, the dental status of patients was determined. To do this, we studied the prevalence of major dental diseases (caries and its complications), non-carious lesions, inflammatory periodontal diseases, diseases of the oral mucosa. Clinical dental examination was carried out according to the generally accepted method. In order to study the initial changes in the periodontal tissues in athletes and their dynamics, the following clinical indices were used: the oral hygiene index (IG) according to the method of Yu. A. Fedorov and V. V. Volodkina (1971), WHO Oral Hygiene Index (OHI) according to the Green and Vermel - hon method (I960), papillary-marginal-alveolar index (PMA) modified by S. Rapp (1960), periodontal index (PI), the intensity of damage to hard tissues of the teeth (CPU).Processing of digital results was carried out on a personal computer using the program MicrosoftExcel and biostat-2009.

Research Results And Discussion

The results of the conducted sociological research show that the majority of athletes are insufficiently informed about the possibility of pathological processes in the dentoalveolar system.

Athletes are often subject to intense physical and psychoemotional stress, as a result of which overtraining syndrome can develop - a phenomenon that affects not only the effectiveness of the training process, but also the health of the athlete as a whole. As the syndrome of overtraining disturbed electrolyte metabolism have sport-shift, a decrease in the number of energy substrates, there is a loss of body salts of calcium, phosphorus, potassium and especially fluoride, which prevents the development of

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caries process . Thus, it can be concluded that against the background of overtraining and incomplete dental health, both a decrease in its level and a deterioration in the quality of life of athletes can occur. In this situation, there is a need to develop a targeted comprehensive program for the prevention of major dental diseases in athletes.

According to the results of the questionnaire, it was found that 13.2 % of athletes agree and 78.2 % disagree that the sport they are engaged in can negatively affect the state of the oral cavity, 8.6 % found it difficult to answer this question. 84.3 % of athletes engaged in cyclic sports noted that they did not receive injuries to the maxillofacial region, 15.7%-received.

The oral condition, functional acid resistance of tooth enamel, the barrier function of oral mucosa and periodontal status in athletes of high qualification directly depend on the functional state of the organism and are secondary, and are not independent, since they depend on several endogenous and exogenous factors.

Saliva is a factor that characterizes the functional state of an athlete when performing physical activities. According to our data, the pH level of oral fluid in the group of athletes is generally lower than in the control group (6.8 vs. 7.1). This condition is caused by intense muscle activity, where a large amount of lactic and pyruvic acids are formed, which, diffusing into the blood, cause metabolic acidosis. The highest pH level was observed in representatives of rowing. This is accompanied by more frequent detection of multiple dental caries and chronic catarrhal gingivitis in these groups of athletes .

Analysis of the obtained research results, presented in the table, the incidence of caries in rowers on kayaks and canoes is on average 79.2%. This indicator exceeds the incidence of caries in the group of healthy individuals, i.e. in young people of the same age, but not professionally engaged in sports (47.7%). Meanwhile, in girls engaged in kayaking and canoeing, the prevalence of dental caries is 2 times more common than in boys.

Table 1

Frequency of occurrence of dental diseases in athletes

Sport type	caries	gingivitis	periodontitis	fluorosis	XPAC
Kayaking and canoeing	79,2%	17,1%	25,2%	10,1%	19,9%
The control group	47,7%	9,9%	7,1%	4,9%	3,8%

According to many researchers, one of the causes of caries is oxidative stress induced by lipopolysaccharide of pathogenic microbial flora. Oxidative damage caused by the action of LPS of the microorganism worsens the processes of microcirculation, tissue oxygenation, causes the development of hypoxia, causes increased expression of a number of cytokines, adhesion molecules, oxygenases and oxidative stress in effector cells. Based on the above, we believe that one of the factors in the pathogenesis of dental diseases and caries, in particular, is the influence of the environment and the microflora of the oral cavity at the time of training, which creates conditions of hypoxia and oxidative stress. It should be noted that during physical exertion, cytokines formed and oxidative stress occurring against the background of oxygen aeration have a significant impact on the condition of the oral mucosa and creates a favorable condition for the development of caries.

Rozanov N. N. [7], studying the dental status of representatives of

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The author notes that the frequency and severity of dental diseases in highly qualified athletes is related to the orientation of the training process, the functional state of the athlete's body, the level of nonspecific protection of the oral mucosa and the immunological reactivity of the athletes ' body. Therefore, in overtraining syndrome, there is a violation of the functions of both local non-specific (lysozyme activity, pH) and immune protection of the oral cavity of athletes, which is one of the main causes of caries development.

The study of the dental status of the athlete rowing in kayaks and canoes showed that the maximum PMA index, reflecting the level of severity of gingival inflammation, is also determined in rowers (18.32±5.46).An early sign of the development of catarrhal gingivitis and periodontitis is the appearance of bleeding gums, which is assessed by the bleeding index SBI. At the initial stage, it is detected even in the absence of other signs of the disease.

Table 2

Indicators of dental status in athletes rowing on kayaks and canoes

Indicators	Control n=14	Athletes rowing on kayaks and a canoe n=14
КПУз	5,07±0,54	3,64±0,77
КПУп	7,07±1,00	4,64±0,85
OHIS	1,19±0,11	1,24±0,15
PMA (%)	7,74±2,28	18,32±5,46
РН слюны	6,93±0,03	6,67±0,08
SBI	0,84±0,13	1,28±0,15
Кердо%	0,50±1,24	-13,10±6,38
ИХБ	4,03±0,13	3,94±0,16
ИПЭ	0,93±0,04	0,90±0,10

КПУ(з) - the sum of carious (component "K"), filled (component "P") and removed (component "Y") teeth in one examined patient

КПУ(п) - the sum of all surfaces of teeth with diagnosed caries and sealed in one person

OHIS - hygiene index

PMA - papillary-marginal-alveolar index

SBI - gum bleeding index

ИК - Kerdo index

ИПЭ - positive emotions index

ИХБ - Hildebrant index

High rates of caries were found. Assessment of the structure of the CCP (K — the number of carious, P — filled, U — removed teeth) showed significant shortcomings in the organization of timely dental therapeutic care

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In the process of collecting data on the dental status of athletes engaged in cyclic sports, it was found that the average value of the KPU index is 3.64±0.77, which corresponds to a high degree of intensity of damage to hard tissues of teeth by caries. When evaluating the index

We obtained an average of 1.24 ± 0.15, which is an indicator of poor oral hygiene and the presence of hard and soft dental deposits. When studying the nature of damage to the hard tissues of the teeth in athletes, it was found that increased tooth abrasion and wedge-shaped defects were found in 43 % of the examined patients. Based on the obtained data, the USP index (level of dental care) was calculated, which was 70 %, corresponding to a satisfactory level of dental care.

The obtained data characterizing the dental status of sports athletes are the basis for the development of an effective program for the prevention of major dental diseases in athletes-security officers. The results of these studies can be used in the daily practice of both dentists and sports doctors, as well as sports coaches and physical instructors who care about the health of their wards and strive to improve their athletic performance.

Conclusions

Inflammatory periodontal diseases in athletes (including those in a state of overtraining) occur with less significant violations of oral hygiene than in people who do not play sports.

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Summary of the article " Assessment of dental morbidity of cyclical sport athletes and ways to solve it»

The aim of this study was to assess the level of dental morbidity of athletes engaged in cyclic sports, and to develop methods for its effective prevention.We examined 230 athletes of different levels of training engaged in cyclic sports, at different periods of the training cycle, aged 18-25 years, the average duration of sports experience - 5.7 ±1.12 g.

The following clinical indexes are used:the index of oral hygiene (IG) according to the method of Yu. A. Fedorov and Vvolodkina (1971), the WHO oral hygiene index (NDI) according to the method of Green and Vermelhon (b I960), the papillary - marginal-alveolar index (PMA) in modification with Rapp (1960), the periodontal index (PI), the intensity of damage to hard tissues of the teeth (CPU). Based on the conducted studies,it was revealed that inflammatory periodontal diseases in athletes (including those in a state of overtraining) occur with less significant violations of oral hygiene than in people who do not play sports.

Key words; caries, periodontitis, inflammation, kayaking and canoeing

Annotation

The aim of this study was to assess the level of dental morbidity of athletes engaged in cyclic sports, and to develop methods for its effective prevention. We examined 230 athletes of various levels of training engaged in cyclic sports in different periods of the training cycle, aged 18-25 years, the average duration of sports experience is 5.7 ± 1.12 g.

Based on the conducted studies, it was found that inflammatory periodontal diseases in athletes (including those who are in a state of overtraining) occur with less significant violations of oral hygiene than in people who do not play sports.

Key words: caries, periodontitis, cyclic sports, inflammatory periodontal diseases.