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Research Article

**PREVENTION OF INJURIES OF THE MAXILLOFACIAL  
AREA IN CONTACT SPORTS USING SPORTS CAPS****<sup>1</sup>Sevbitov A.V., <sup>2</sup>Borisov V.V., <sup>3</sup>Davidiants A.A., <sup>4</sup>Timoshin A.V., <sup>5</sup>Ershov K.A.,  
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*The article presents reviews of various equipment used in athletes for the prevention of injuries to teeth. Presents a detailed classification of different types of mouth guards, and also contains a brief historical sketch, which will be useful for the overall development and understanding of the background of the mouth guards. Which allow you to immerse yourself in the mouth guards and understand the seriousness of the problem from the inside, which is so important for doctors and researchers, to avoid repetition in their works. The relevance of the topic presented statistics, the number of Russians involved in sports increased from 39% in 2006 to 52% in 2013, indicating the need to increase measures of prevention of injuries of the maxillofacial area, as in athletes, Amateurs and professionals.*

**Key words:** mouth guards, sports dentistry, injuries, fracture, luxation, dental traumatology, ethylene vinyl acetate.

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**INTRODUCTION:**

In literature one can find different names for protective complexes used in the prevention of complications contact sports games. It is known that splinting-the connection of individual teeth in a single unit to limit their mobility and redistribution of functional load. According to Tsepov L. M. et al. (2006), the first signs of pathological mobility of teeth are indications for their splinting, which can be temporary and permanent, and the design - removable and non-removable. In addition, there are tires for the front and side teeth[1].

Kabakov B. D. (1981) with reference to the works of Egorov P.I. (1965), gives the most complete classification of tires from the point of view of the functional application:

1. Standard tires designed to fix a particular segment of the limb or jaw;
2. Fixation tires for fixation of bone fragments;
3. Distraction splints are used to stretch bone fragments and surrounding soft tissues[2].

As can be seen from the classifier, the basis of splinting is the principle of immobilization. However, in dentistry and, in particular, in the prevention of injuries of the maxillofacial area in sports, the most common were caps (from the German *kappe* - cap, cover) — devices made of flexible plastic, worn on the teeth to protect against sports injuries.

It is known that the first recorded mention of the tires, according to Lohova V. A. (2015) is dated 1890, when Dr. Woolf Krause (WoolfKrause) developed protective gingivitis and periodontitis, which gave the name "mouthguard". The purpose of this protection was the prevention of sports injuries in professional boxers due to debilitating lacerations of the lips arising from contact with the cutting edges of the teeth. These injuries were quite common and prevented Boxing competitions during this time. Wulff Krause's protective tires were originally made of gutta-percha and held in place with clenched teeth. Later Philip Krause (PhilipKrause), son of V. Krause, changed the design and made them out of rubber. E. N. Zhulev (2008) cites data on the earliest record of the use of protective tires was made in the United States: in 1916, the device type "mouthguard", when Thomas Carlos, a dentist in Chicago, produced a "mouthpiece" designed for the participant of the Olympics in the United States Dinnio'keefe. In professional sports this method of protection of the

teeth has received the name of "gumshields" or "gum shields"[3,4].

**MATERIALS AND METHODS:**

This work was done at Sechenov University with supported by the "Russian Academic Excellence Project 5-100".

In the Russian dental practice, the first work, according to Zhuruli N. B. (1975), dedicated to the prevention of sports injuries in the maxillofacial region dated 1925, when the dental technician VN. Ivanov-Rudnitsky proposed for the manufacture of protective dental caps rubber tires. It was reported that the protective plate turned out to be quite elastic, but required storage in water. Further developments were continued in 1973 Poyurovskaya I. Ya, Zhuruli N. B. sports dental tires made of soft plastic "Elastoplast" are developed and implemented in practical health care. This development formed the basis of the design of the Boxing cap[5].

In the last decade, there has been a tendency to increase the number of patients with injuries of the maxillofacial region (Dubrovin M. S., 2013). For example, patients (Poboleda L. V., 2013) admitted to hospital about maxillofacial trauma noted that inflammatory periodontal diseases are found in 94,8% of the patients, and during follow-up, this figure reached 100%[6].

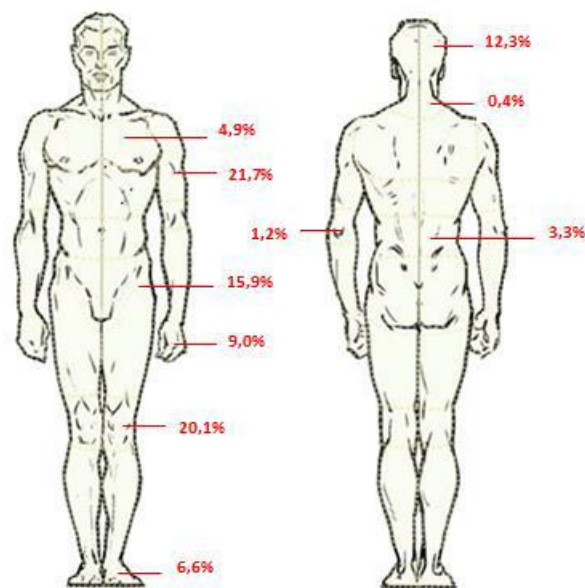
According to "Cyto them. N. N. Priorova of Rosmedtechnologies" in 2009, it was 10029342 adult victims seeking help in connection with the received trauma. In recent years, the number of people involved in sports, including contact sports, has increased. According to the all-Russian center for the study of public opinion, the number of Russians involved in sports increased from 39% in 2006 to 52% in 2013. About 3% of respondents are engaged in contact sports[7].

According to Svirina O.A. (2005), preventive measures play an important role in the preservation of efficiency and socialization of patients who have suffered injuries as a result of sports activities.

Observations Terent'eva O. Y. for injury in hockey team "Tractor" found that one player had 22,06±1,97 injury. Head and neck injuries were the most frequent (18.5% of all injuries). This indicates the relevance of protective caps[8]. (pic.1)

**RESULTS AND DISCUSSION:**

Code ICD-10	Nosology of injuries	Number (%)
S00-09	Head injuries	12,3
S10-19	Neck injury	0,4
S20-29	Chest injuries	4,9
S30-39	Injuries to the abdomen, lower back, lumbar spine and pelvis	3,3
S40-49	Injuries to the shoulder	21,7
S50-59	Elbow and forearm injuries	1,2
S60-69	Wrist and hand injuries	9,0
S70-79	Injuries to the hip and hip area	15,9
S80-89	Knee and Shin injuries	20,1
S90-99	Injuries to the ankle and foot	6,6
	etc	4,5



Pic. 1 Prevalence of injuries among hockey players.

Maxillofacial injuries as a result of unforeseen accidents, such as a traffic accident, of course can not be prevented. However, where the likelihood of injury to the maxillofacial area is high, as in most sporting events, injuries can be avoided. Numerous publications testify to the interest of studying sports Orofacial injuries and point to the role of properly selected protective dental splint in the prevention of

dental injuries. Although the statistical results may differ, most of these results have shown that there is a great importance for the prevention of dental injuries in various sports. The data are given (Sevbitov, A.V., et al., 2014) on the need for individual selection of the level of protection for each athlete and the possibility of making individual protective tooth tires of different thickness and shape for maximum

comfort and ease of use. This is consistent with the main goal of personalized medicine, which is based on the division of the population of healthy and sick people into separate individuals who differ in the probability of occurrence of the disease and the ability to respond to certain types of therapy. In the opinion of Rabinovich, S. A., Vasilyev, Y. L. (2014), it is connected with individual, constitutional features and structure, including maxillofacial area[9].

### CONCLUSIONS:

The analysis of the works of foreign authors in many ways makes it possible to talk about a significant delay in the development of a similar branch of sports and medical science in Russia. Although it is appropriate to add that most of the works of foreign authors are devoted to traumatic lesions of the dental apparatus of athletes (D. I. Karpovich, et al., 2011) [10].

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