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## RESEARCH ARTICLE

### THE IMPORTANCE OF SPORTS DENTISTRY IN ATHLETICS-RELATED ORO FACIAL INJURIES

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#### ABSTRACT

Orofacial and dental trauma continues to be a common problem for sports medicine teams. All sports have a risk of dental injury, but "contact sports" are thought to be associated with higher risk. Prompt assessment and appropriate treatment of the most common dental injuries can Tooth structure can be preserved or restored. Despite mounting evidence, mouth guards and mouth guard use have not kept up with increased participation in sports. Sports dentistry is one of the newest and most promising fields in dentistry. It mainly covers the prevention and management of sports-related dental injuries and related dental diseases. Sports dentists or teams assist athletes in the prevention, treatment, and diagnosis of dental injuries. The most important aspect of preventing sports-related facial injuries is wearing basic protective equipment such as helmets, masks and/or properly fitted mouth guards. Tooth trauma is the most common type of dental injury during sports. Many athletes are not aware of the health effects of mouth injuries or the risk of serious head and face injuries during competition. Dentists can play an important role in educating athletes, coaches and patients about the importance of preventing oral injuries in sports. The purpose of this article is to raise professional awareness and interest in referrals to sports dentistry.

## INTRODUCTION

Dental trauma in sports is the most important link between sports and dentistry. Sports dentistry is a branch of sports medicine that deals with the prevention of sports injuries, oral diseases and conditions of the mouth and face (Kumar, 2021). Therefore, the need for "team dentists" from universities to professional teams is emphasized. Sports dentistry has its origins in the 1980's (Scott 1994) and plays an important role in providing athletes with optimal oral health and helping them achieve optimal performance in competition. Dental injuries are the most common type of orofacial injury that occurs while participating in sports (Chapman, 1989). Contact sports are becoming more and more popular, and participation from an early age is encouraged thus, orofacial sports injuries are becoming more important (Kumamoto, 2004). It identifies athlete problems such as mouth breathing, improper placement of archwires, and administers drugs properly without the use of substances that can provide positive doping, which is present in many pain relievers. Athletes, coaches, athletic directors, athletic trainers, parents, and members of the dental community should be aware that individuals who participate in sports activities are at risk for dental trauma which includes soft tissue injuries, and hard tissue injuries like injuries to teeth and facial bones. (Ranalli, 2002).

The recognition of injury-prone dentition and expertise in treating dental injuries quickly forms the basis of sports dentistry. Sports dentistry has also been associated with mild traumatic brain injury during gaming and erosive lesions from continued ingestion of highly acidic sports and energy drinks. Athlete stress has also been shown to affect athletic performance such as lead athletes to take medication and smokeless tobacco use. Athletes can also be educated about the benefits of yoga, as yoga reduces stress and improves performance. Therefore, we are working hard to establish epidemiological studies of sports injuries and prevention methods which ultimately lead healthier athletes and better performance. The objective of this article is to define and discuss the role of professionals, focused on prevention methods and frequent risk situations that involve athletes.

**Oral Health of Athletes:** The high performance demands placed on athletes can only be achieved by perfectly healthy individuals. The time, effort, and money invested in achieving this level of fitness should not be jeopardized by preventable oral health problems that occur before or during competition.<sup>(6)</sup>For optimal performance, it is important for dentists to perform a detailed assessment of the athlete's oral health to detect any changes or medical conditions, such as misaligned teeth. When athletes exhibit alterations in their bite, their performance can be significantly impacted because chewing becomes

less efficient and subsequent digestion of food is reduced, affecting nutrient absorption. Loss of muscle balance, headaches, TMJ problems, discomfort and stress can also be occlusion becoming imbalanced (Souza, 2011) Therefore, it is the duty of dentists working in SD to conduct regular examinations to detect changes and illnesses and to promote health education. The dentist's role is to work with the patient to identify individual risks, whether physiological or modal, and to develop a prevention plan that meets the athlete's nutritional and lifestyle needs (Bryant, 2011).

**Trauma:** Dental trauma occurs most frequently during sports activities and is often associated with serious aesthetic, functional, economic, and psychological consequences. When it comes to hard tissue trauma, the nasal bone is one of the most affected structures in sports accidents because it is located in a vulnerable area of the face and projects forward against adjacent structures. The most common fractures were of the zygoma (30.8%) and temporomandibular joint fractures in 18.8%. It is important to apply prophylaxis in high-performance sports to minimize injuries that can jeopardize an athlete's career (Gassner, 1999). Anterior teeth are most susceptible to dental trauma, and upper incisors are more susceptible to injury due to anatomical position (52–90%) (Muller, 2008). The most common is an uncomplicated crown fracture. Depending on the severity, it can even disqualify athletes from important competitions. Amateur athletes have a higher risk of injury than professional athletes. <sup>(11)</sup>These lesions are more common in sports such as mountain biking, roller skating, skating, and aggressive contact sports.

**Psychological impact:** There are psychological impacts of injuries on an athlete's mind including loss of confidence, reduced self esteem, anxiety and depression. This may include dental injuries such as avulsions, crown/root fractures, lacerations and lacerations. Severe deformities are also possible such as loss of function and pain. The most common disorder is post traumatic stress disorder which is why especially prevalent in athletes that are in the limelight.

**Management of sports related injuries:** Protection from sports-related orofacial injuries currently comes in the form of three shielding equipment – mouthguards, facemasks, and helmets. The American Dental Association estimates that face shields and mouth guards prevent about 200,000 in high school and college football alone. <sup>(12)</sup> Due to the risk of orofacial injury, coaches and teachers should insist that players wear mouth guards during training and games. In children, mouthguards should be replaced annually due to growth changes in the mouth and jaw area (Tiwari, 2014).

### There are three main types of mouthguard:

**Mouthguard in stock:** The Academy of Sports Dentistry states that mouthguards are unacceptable as orofacial protective devices. <sup>(14)</sup> Standard mouthguards are limited in size, resulting in an improper fit, causing discomfort and irritation when worn. However, it is recommended by orthodontists because it allows tooth movement while protecting soft tissues

**Mouth-formed protectors:** The shell liner and the thermoplastic mouthguard are two types of mouth-formed protectors (Deogade, 2016). The shell liner type is made of a preformed shell with a liner of plastic acrylic or silicone rubber. The lining material is placed in the player's mouth and molded to the teeth and then is allowed to set. <sup>(16)</sup> The preformed thermoplastic lining is immersed in boiling water for 10–45 s, transferred to cold water, and then adapted to the teeth. This mouthguard seems to be the most popular of the three types and is used by more than 90% of the athletic population (Deogade, 2016)

**Custom Mouthguard:** They are available in a variety of materials such as latex or latex reinforced, vacuum formed clear or pigmented plastic sheets, or plasticized acrylic resins. It can be made from materials. There are two types of custom his mouthguards: custom vacuum-formed mouthguards and pressurized laminate mouthguards.

**Pure Power Mouthguard:** A relatively new mouthguard, the Pure Power Mouthguard, uses neuromuscular dentistry techniques which focus on the alignment of temporomandibular joint (TMJ), masticatory muscles, bones, teeth, and the neural circuit associated with the oral cavity. It increases performance by improving strength, speed, endurance, agility, accuracy, and balance. It is based on a theory that when muscles in the face and jaw are properly aligned and relaxed, it will lead to improvement in strength and balance (Arent, 2010).

**Bimaxillary mouth guard:** Bimaxillary mouth guard stabilizes the mandible to the maxilla and thereby provides significant protection against the possibility of mandibular fracture. Therefore, Its use is highly recommended in boxing, higher grade of competitive sports such as rugby, patient undergoing orthodontic treatment and those who have recently sustained a mandibular fracture (Chapman, 1989)

**Edentulous patient:** Edentulous patient should use a modified bimaxillary mouthguard. Vertical dimension at rest is used for fabricating the mouthguard (Chapman, 1989).

**Double jaw mouthguard:** A double jaw mouthguard stabilizes the lower jaw against the upper jaw and provides considerable protection against possible mandibular fractures. It is therefore highly recommended for use in higher level sports such as boxing, rugby, in patients undergoing orthodontic treatment, and in patients with recent mandibular fractures.

**Scuba divers:** A well-designed custom mouthpiece is therefore recommended for relieving and preventing diver's mouth syndrome (Chapman, 1989).

**Mouthguard Replacement:** As a general rule, it is recommended that a standard mouthguard should be replaced after about every 2–3 years as there is some degree of deterioration of the physical properties, especially resilience. In the case of the bimaxillary mouthguard, the replacement life is also about 3 years if proper care is taken with storage (Chapman, 1989).

**Face guard:** Faceguard is a prefabricated cage of metal or composite which is attached to a helmet or a head strap and provides good protection to the face and teeth (Bourguignon, 2009) Faceguards must fulfill the following three requirements that is protection ability, safety, and maintaining performance (Wada, 2018).

**Face shield:** A face shield is a prefabricated metal or composite cage that attaches to a helmet or headgear and provides good protection for the face and teeth. A new study shows that wearing a full face shield slightly reduces the incidence of facial and dental injuries without increasing the risk of neck injuries, concussions, or other injuries. , safety and performance maintenance (Wada, 2018). Face shields usually form a specific shape with a core of thermoplastic resin to protect the face from damage. It has padding material both inside and out. The face shield manufacturing process is highly dependent on the molding temperature of the thermoplastic resin. Face shields made from thermoplastics are typically thicker than those made from thermosets (Wada, 2018). Face shields made from thermoplastics are usually thicker than those made from thermosets. Player performance suffers from the increased thickness. Abe et al. (2013) reported that face shields made from fiber-reinforced thermoplastics have amazing shock-absorbing capabilities.

**Safety helmets:** Safety helmets are essential for high-risk sports as they reduce the risk of tooth, face and skull injuries. The outer layer of modern helmets is usually made of polycarbonate or a high-quality polymer that promotes proper distribution of stresses and forces that reduce impact energy. Proper use of helmets can help snowboarders avoid head injuries from falls and collisions. The study found that he 52.9% of riders with tooth, nose or facial injuries were not wearing a helmet (Machado, 2014).

## Recommendation

Preventive sports dentistry includes examination, correction, management and treatment of injuries and trauma. Through these exercises, the stability and strength of the structures and tissues of the oral cavity are improved, limiting the negative effects that sports practice can have on them. To protect teeth during training and competition, athletes should: There are some recommendations that should be followed. Mouthguards, also known as splints, are flexible intraoral plastic oral appliances that protect the oral cavity and perioral structures from impact and severe impact. They prevent fractures, dislocations, and serious injuries such as broken jaws and injuries to the cervical spine. Early treatment of oral lesions should also be performed. Even with the correct use of mouth guards, athletes can experience minor soft tissue injuries or aphthae in their oral cavity. Therefore, it is important to prevent and treat oral injuries early using specific products such as skin care products which contain aloe vera which strengthens, moisturizes, and soothes the oral mucosa irritated by the use of mouth guards and creates a protective film that moisturizes and protects the epithelium of the mouth. Another recommendation in sports dentistry to prevent oral health problems is to maintain good oral hygiene. It's as easy as brushing your teeth thoroughly after every meal, paired with something like dental floss, mouthwash and other products that help keep the mouth clean and protected on a daily basis. Of course, it is important to emphasize the importance of dental check-ups every six months to check the condition of the patient's gums and teeth. Oral health should also be considered as a basis for improving physical performance.

## CONCLUSION

Sports dentistry covers a wide range of modalities for the prevention and treatment of sports injuries of the maxillofacial region and related oral diseases and their manifestations. Pediatric dentists must have solid practical clinical knowledge of sports-related oral injuries in children and adolescents and various prevention methods. With the increasing trend of sports participation in schools and colleges, protective equipment and prevention options are becoming important. Sports-related dental injuries are not uncommon and they deserve our immediate attention. In this regard, pediatric dentists should work closely with teachers, coaches/trainers, parents and other medical professionals to ensure comprehensive dental and facial care. Prevention programs should include information about sports-related oral injuries, precautions such as helmets and mouthguards, and how to manage them, in order to raise awareness among the public. We also have a responsibility to identify, educate and provide athletes with precautions such as mouth guards. Knowledge of the manifestation and management of oral injuries commonly encountered in sport is essential for athletes to receive immediate care and return to competition.

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