

Comprehensive care for athletes: The dentist as an expert in their assessment and management

Abstract

Applied dentistry in the field of sports is a relatively recent practice that requires the participation of various professionals responsible for improving and managing the oral and systemic health of athletes. It is a field that still has few professionals trained to meet the increasing demands of recreational sports activities, the requirements for high-performance athletes, and the high standards set for professional athletes. Both recreational and professional sports are in continuous development, which can sometimes lead to a greater risk of trauma during practices and sporting events. Incorporating dentistry into sports settings will allow for an improved approach to oral health, oral diseases, and systemic manifestations that affect the overall health of athletes from a comprehensive perspective. This will contribute to addressing a field that currently has very little coverage, positively impacting the quality of life and performance of amateur and high-performance athletes.

Keywords: dentistry, sport, oral health, sport settings, high performance

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Introduction

Sports practice, whether recreational and in the initial stages of training, or for professionals and high-performance athletes, requires an excellent state of overall health, which includes health of the oral cavity and stomatognathic system. Recent studies have established a clear relationship between athletes' performance and oral health, hence the recommendation for incorporating dental assessment before starting training to prevent both local and systemic injuries, as well as complications from existing conditions. This article aims to emphasize the importance of dentists in the comprehensive assessment of athletes and sportsmen in order to enhance their performance, promote their overall health, and prevent the occurrence of injuries originating from oral or stomatognathic system issues.

Method

The objective of this paper was to identify articles, associations or organizations with the focus in sports dentistry from the perspective of advances in this area and those that consider the importance of training specialists in this topic. The search period was between January and March 2024, it focused on articles published since 2000, in English or Spanish, with access to the full text; the following search terms were used: sports and dentistry oral health, sports environments, high performance and graduate education. This search resulted in 24 articles related with the topic, of which 16 were discarded because the central issue was the epidemiological behavior of the athlete's physical and oral assessment, especially high performance athletes, who was evaluated for an injury during a sport event. The six associations and organizations identified were included in this review.

Background

In recent years, concern has been generated to determine the impact of oral health on the performance of athletes, there are some studies aimed at determining the relationship between musculoskeletal injuries and health status, particularly oral health of athletes. One of these is the study developed by Uchamocha et al, whose main finding was to identify a relationship between non-traumatic muscle injuries, creatinine kinase levels and oral health index of a group of 30 athletes

of professional soccer team.¹ In the same sense, Opazo-García suggest that deficiency in oral health is associated with poor sport performance and declare dental problems affect muscle recovery, can generate intense pain or cause several levels of systemic infection, producing from incapacity of the sportsman until generate not participation in the corresponding competition.²

Dentistry in sport settings

Sports Dentistry is a relatively new field in the context of healthcare for amateur and high-performance athletes; it is aimed at establishing the factors that influence an athlete's performance. Some international dental organizations have been concerned with determining the interaction of oral health and the stomatognathic system with an athlete's sports performance. This new field is oriented towards the prevention, control, and treatment of orofacial injuries and those non-dental injuries resulting from physical exertion and/or dentofacial trauma, with the aim of maintaining the overall health of the amateur or professional athlete.³ It is necessary to recognize that only through interdisciplinary work can the functioning of the human body be understood as a unique system, in which each of its parts affects the others, and the constitutive structures of the stomatognathic system are no exception. Sports Dentistry is the specialty responsible for the study, review, control, prevention, and treatment of orofacial injuries with their corresponding manifestations and related diseases. It is focused on studying both dental and non-dental injuries that occur during dentofacial trauma, and its primary aim is to maintain oral health in athletes. Additionally, it involves disseminating and providing information related to oral health and sports to be applied in the world of sports competition, both at the amateur and professional levels.

The World Dental Federation (WDF), in its Policy Statement approved by the General Assembly in September 2022, promotes the integration of oral health care into sports medicine, considering that both amateur and elite athletes face a higher risk of suffering from oral injuries while engaging in contact sports without adequate protection. Some dental problems may stem from training, deficiencies in oral hygiene, poor nutrition, or parafunctional habits. It's also essential

to be clear about the prescriptions made by the dentist, as the metabolism of some medications can result in substances prohibited by anti-doping regulations.⁴ Sports Dentistry, as mentioned earlier, is responsible for the study, review, control, prevention, and treatment of dental, oral, and facial injuries. It conducts analysis of anthropocephalographic measurements, produces and disseminates new information related to oral health and sports in both amateur and high-performance competitions, and discusses pharmacology that may affect performance or metabolize into prohibited substances in various sports competitions.⁵ In this regard, dentoalveolar traumas should receive special attention due to the amount of energy transmitted during a collision with bodily projection, which completely alters the effect of the impact on facial and oral structures.

The WDF has established as one of its main objectives the improvement of the oral health of athletes, as well as their systemic and psychological health, knowing how it impacts the performance and safety of the athlete. Therefore, it recognizes the importance of the participation of sports dentistry experts as part of the comprehensive care team for athletes, both on and off the field, to ensure the overall health of the athlete through preventive and curative dental interventions.⁶ In this context, it is now recognized that dentistry is as important as nutrition and psychology in the process of integrating the medical teams of sports entities, especially in high-performance and professional settings.⁷ The high levels of performance required of a professional athlete can only be achieved by individuals who are entirely healthy. Therefore, oral health conditions are a fundamental aspect to consider, given their effects on athletes' daily lives, well-being, and performance.⁸

The importance of dental care in sports settings is not only directed towards intervention and management of oral health but also encompasses a significant educational role regarding oral hygiene and the use of appropriate tools. It involves understanding the relationship between dietary habits, oral health, and an athlete's performance, as well as identifying individuals prone to developing conditions such as cavities in a timely manner.⁹ Dental professionals must recognize the particular characteristics of caring for patients involved in sports. Among these are non-dental injuries that occur during dentofacial trauma, the risks of accidents, their prevention, and pharmacological management. There's also a need to strengthen education in oral health, understand the relationship between dietary habits and oral health, and grasp the implications of oral health on the performance of both amateur and professional athletes.¹⁰ Furthermore, the role of these specialists extends to assisting athletes on the field, during training, and in the laboratory during physiological and morphological evaluations. Additionally, it involves work at the primary level: education, health promotion, and disease prevention; secondary level: early diagnosis and timely treatment; and tertiary level: rehabilitation of functions.^{11,12}

Because of the above, the assessment of the stomatognathic system must be systematically incorporated into the athlete's health examination, in order to establish a medical history that allows for comprehensive care. Therefore, the dentist must be integrated into the sports medical team¹³. In this context, it is equally important for the athlete to learn the techniques, skills, and rules of the sport they practice, as well as to receive attention, instruction, and protection from healthcare professionals.¹⁴ The development of this field of knowledge requires the implementation of Evidence-Based Dentistry (EBD) methodology and the use of research findings for the care of both amateur and high-performance athletes. It involves disseminating new knowledge related to the stomatognathic system, oral health, and sports, particularly those aspects relevant to both

amateur and high-performance sports competitions. Additionally, it involves the development of programs aimed at preventing oral and dental disorders and providing comprehensive care for athletes. With advancements in various sports disciplines and the formalization of regional and global competitions, sports dentistry associations have been consolidated. Examples include the Academy for Sports Dentistry (ASD), the Sports Dentistry Association of Chile, and the Spanish Society of Sports Dentistry (SEOD). These associations are interested in sharing experiences regarding the oral health needs of athletes and highlighting the importance of having a dentist on the healthcare teams that attend to athletes. During the 2012 London Olympics, out of the 399 athletes examined, the most relevant results showed that 55% had cavities, 45% had moderate to severe dental erosion, and 76% had periodontal disease ranging from localized to generalized gingivitis.¹⁵

Sports dentistry is considered by various organizations as a specialty of utmost importance for addressing different oral and dental diseases or systemic manifestations that affect the overall health of athletes and the potential effects they may have on their performance and quality of life. Achieving this academic development required several decades of research and dissemination of results on various sports practices, both amateur and professional, as well as high-performance. Different studies report the most frequent events being problems of the musculoskeletal system and orofacial injuries.¹⁶ The document on Sports Dentistry by the WDF suggests that among the most common injuries in athletes are fractures of facial bones, non-carious lesions (various types of dental wear) due to excessive training, and carious lesions caused by dietary habits or, specifically in the case of swimmers, by the acidity of the aquatic environment.¹⁷ In this regard, Osorio suggests that within the group of orofacial injuries, there are injuries to both soft and hard tissues, as well as dental intrusions, luxations, crown and/or root fractures, complete avulsions, and dental and facial fractures.¹⁸

According to the Eastman Centre for Oral Health and Performance at University College London, recent research demonstrates that "elite athletes often have higher levels of oral diseases, cavities, and inflammation than the general population, affecting their performance, their ability to eat, relax, sleep, and smile." In summary, oral health has a significant impact on the quality of life of athletes.¹⁹ The European Association for Sports Dentistry (EA4SD) and the Academy for Sports Dentistry (ASD) are committed to the growth of this field. They have formulated international guidelines for the development, research, and education of sports dentistry and have integrated with the European College of Sports and Exercise Physicians (ECOSEP) to promote and provide the best possible care for professional athletes and the general public. In November 2019, during the 6th International ECOSEP Congress and the 1st International Symposium of EA4SD in Paris, France, a consensus statement on oral health in sports was agreed upon. Based on the results of the latest research, this statement proposes basic principles for integrating sports dentistry into sports medicine.²⁰

The consensus statement states that the efficient integration of sports dentistry into sports medicine will allow for better education on oral hygiene, timely diagnosis and treatment of dental cavities, and prevention of more complex disorders such as apical periodontitis and its association with systemic diseases. This will have a positive impact on the health of athletes and therefore on their performance and quality of life. It also emphasizes the importance of early diagnoses by sports dentists in order to plan and provide the necessary treatment promptly, benefiting the oral and overall health of athletes, both high-performance and amateur.²¹ It is necessary to point out that upon

reviewing the state of the art, ample information related to applied dentistry in sports has been found. Most of it has to do with describing and investigating the epidemiology of mild and severe injuries or proposing strategies for the prevention of such injuries, including the need to develop personalized protectors for athletes. Additionally, in countries such as the United States, Canada, Spain and Brazil, among others, there are associations dedicated to studying this branch of dentistry.^{22,23} The consensus statement of EA4SD, ASD, and ECOSEP concludes that “there is an urgent need to effectively integrate sports dentistry into sports medicine; promote research on the impact of the stomatognathic system on physical exercise, and raise awareness about the importance of oral health within the athlete community, healthcare professionals, and sports federations”.²⁴

Conclusion

The rise in popularity of physical activity to promote health in all stages of life, the increase in different habits and nutritional supplements, as well as the intensification of physical and psychological effort, expose amateurs, professionals, and elite athletes to greater risks associated with oral health. It is necessary to delve into the relationship between oral health and injuries, especially muscular and joint injuries in athletes, because some studies suggest that oral cavity and stomatognathic system injuries are the origin of these injuries. However, there is a lack of epidemiological studies that can confirm these findings. It is necessary to consider that this field of dentistry application requires the training of experts. Because of this, academia should explore the possibility of offering postgraduate programs focused on sports dentistry.

Acknowledgments

None.

Conflicts of interest

The authors declare that there is no conflicts of interest.

(Endnotes)

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