



Sport Dentistry: Epidemiological Approach in Uruguay

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Abstract

Explore the current role of Sports Dentistry in sports institutions in Uruguay, highlighting the influence of oral health on sports performance and the relevance of the use of personalized mouthguards according to the needs of the athlete, as a preventative of dental, bone, joints, soft tissues and optimizer of respiratory function.

It is an analysis, in the form of an exploratory epidemiological survey, carried out through questionnaires, applied to random population of technical-health teams and athletes in Uruguay, reinforcing the hypothesis that the athlete's oral health is not considered a relevant factor at the moment. to evaluate sports performance and planned prevention work on oral health in Sports is not highlighted either.

The search engines used were Pubmed, Scielo and Medline, without a limited time period, using the descriptors: Sports dentistry, oral health in athletes, mouth guard.

Keywords: Sports Dentistry; Oral Health in Athletes; Mouthguards

Introduction

Sports Dentistry is the branch of Sports medicine that is responsible for addressing athletes through their oral health, with the main objective of optimizing sports performance in all sports disciplines. According to the Academy for Sport Dentistry ASD [1] it is defined as "The branch of Sports Medicine that deals with the prevention and treatment of oral injuries and oral pathologies associated with sports and exercise".

In an article [2] published by Dr. I Needleman in the British Dental Journal 2014, it is highlighted that, in dental practice, it is common to find poor oral health or no habits in patients dedicated to elite sports. of adequate prevention, ignoring its impact on general health and sports performance.

The objective of this work is to analyze the role of dentistry in sports, in the field of sports institutions of the main sports practiced in Uruguay and highlight the impact and influence of oral health on sports performance.

To develop the current relevance of Dentistry in sports, a review of the available bibliography on the subject was carried out, as a search strategy the databases Pubmed bibliografic Index, Medline, Scielo were selected, where the descriptors were used. Sports dentistry and mouth guards, without a limited time period, includes textbooks and published scientific articles, excludes career theses, articles that do not have an abstract, repeated

articles, reports of specific cases and articles that are not complete and available electronically, It is detected that there is a shortage of material in this regard and only a single article was found in the entire search, published in the Revista Brasileira de Medicina do Esporte, in reference to Sports Odontology as a current discipline in development.

In reference to the other descriptors used, little result was obtained in update articles on oral health in athletes, nor was there any literature on the development of Sports Dentistry in Uruguay or studies carried out in this regard.

Development

The National Youth Sport Safety Foundation [3] states that traumatic dental injuries represent the most common orofacial problems in sports and the majority of these traumas can be prevented with properly adapted individualized mouthguards (PBI), made with the specific characteristics for each sports discipline. Similar recommendations are established by the FDI World Dental Federation [4] in Prevention in Sports Dentistry as of 2016.

The ASD [5] establishes the specific characteristics for each sporting discipline that must have a correctly adapted PBI, in the latest research carried out in 2015, since with their use there is a reduction in orofacial injuries, including concussion and improvement of the physical performance in athletes, when

properly used, among them it stands out that it must adequately cover and protect teeth and surrounding tissues, it must be placed in the most prominent dental arch of the athlete, because it will be the arch that will suffer the greatest impact forces, is made on an individualized model of the patient, it must have an adequate thickness in all areas to reduce the impact in the occlusal and labial area, balanced occlusion for the correct absorption of impact forces, comfort when speaking, adapted to the demands of the patient. game and with specific characteristics according to the sport practiced, made with an FDA approved material [6], personalized and correctly adapted, it must be routinely examined for fit and function.

The most frequent injuries in sports activity are traumatic [7], depending on the impact force and structure with which the injury is caused. They are injuries that affect oral cavity structures such as teeth and mucous membranes, extending to the craniofacial mass, frequently involving the temporomandibular joints, which may be responsible for chronic temporomandibular trauma that affects the athlete daily.

Dysfunction [8] of the temporomandibular joint, as well as permanent injuries to it (temporomandibular disorders), is another of the great concerns of sports dentistry.

There is bibliographic data [9] that record that adapted and individualized mouthguards reduce the force of impact by 80%, as well as being used in conjunction with face masks in severe trauma so that the athlete can quickly return to playing sports.

Although the prescription of mouthguards shows an upward trend in Uruguay, and its effectiveness is proven, there is still a need for greater specification regarding the characteristics of the type of sport, age group, material, design and time of use.

Worldwide, in some sports disciplines, which are exclusively contact, the use of a mouthguard is mandatory in competitions, such as boxing, martial arts and mixed martial arts (MMA).

In the rest of the sports, they are generally not indicated on a mandatory basis with preventive criteria, only recommended, except when there is a previous injury and the athlete is recovering, information consulted in the sports protocols of the most relevant federations worldwide.

In the sports that are most frequently practiced in Uruguay, citing Soccer and Basketball as examples, the mouthguard is not mandatory in any category.

In contact and high-impact sports, such as Rugby, according to the information published by the Uruguayan Rugby Union URU [10], or the Uruguayan Hockey Federation [11], it is highly recommended, but there is no specific regulation on the type of

protector that should be used and it depends on the player, the manner and time of use thereof, during the match.

In karate, boxing [12] and MMA competitions, it is mandatory to enter the competition that the athlete has two mouthguards, but without specifying their characteristics or requirements regarding the correct development of functions such as speech. and chewing.

In football or volleyball, in our environment it is currently recommended, simply and exclusively, if the athlete has already suffered an injury and it is used as protection, collaborating in recovery, so that the athlete can quickly return to competition.

There is no evidence in any case that the mouthguard is recommended as an optimizer of respiratory rate or sports performance.

In the few cases in which it is recommended for the health of the team, commercial intraoral devices, standard thermo-adaptable type, which are available in sports houses, are generally chosen instead of PBI adapted and made by a professional dentist, for different reasons. causes that range from the most economical choice, to the most practical or easy to obtain or due to lack of knowledge of the benefits of an anatomical PBI, adapted to the needs of the athlete.

It is noteworthy that in addition to traumatic injuries, there are other pathologies [13] of the masticatory system, linked to sports practice [14], associated with the skeletal, functional, and anatomical configuration, such as malocclusions, tooth loss, gingivitis, periodontitis, pulpitis, caries disease, enamel lesions, myofascial pain, trigeminal neuralgia, bruxism, altered functions of the masticatory system such as breathing and chewing, temporomandibular disorders and sleep disorders such as snoring and apnea, which will directly affect sports performance, but which are not the subject of analysis in this work.

Analysis of the role of sports dentistry in the local environment Relevance [15]

The performance [16] of the Sports Dentist involves different tasks and functions such as [17]:

- Orofacial first aid during sports practices and training.
- Immediate emergency treatment in dislocations, avulsions and fractures.
- Identification of dental, jaw and joint fractures, joint dislocation.
- Identification of dental alterations and orofacial pathologies associated with sports.
- Indication of individualized mouthguards that are correctly adapted and personalized.
- Functional analysis of the athlete's respiratory function and optimization of it, in direct promotion of nasal breathing.
- Knowledge of drugs allowed in sports and illicit drugs.

In an article [18] from 2010, written by Dr. Ruben Darío C. Espinosa and Dr. Jose E. Robledo Llano, in a work carried out during the practice process at the U.A. of Manantiales, the role of the Dentist in a sports health team, where it is mentioned that “the specialty arises as a necessity for the comprehensive health of athletes, contributing to the improvement of sports performance and quality of life of athletes”.

In order to propose what the Role of Sports Dentistry is in the local environment, in the Eastern Republic of Uruguay, a general [19] exploratory [20] survey was carried out with the objective of gathering information on the current situation and establishing a basis for it as a platform for future analysis. Specifically, the accurate hypothesis that supposes the existence of a great gap in terms of information for athletes and technical-health teams about oral health care and prevention and how this affects the development of sports performance.

Materials and Methods

To carry out this exploratory study, the scientific survey method based on standardized questionnaires was used as a basic instrument, a technique mentioned in article [21] of J.Casas Anguita, *et al.* published in Elsevier, “The survey as a research technique. Preparation of questionnaires and statistical treatment of data” demonstrated in 294 articles found in the Medline express database with the Survey descriptor between 1997-2000.

The questions posed as an instrument of these surveys were developed specifically to analyze the hypothesis that motivates this article, regarding the scarcity of information for athletes, sportsmen and health teams regarding the relationship between oral health and its impact on performance. sports, through the technique [22] of subsampling by randomly selected conglomerates to avoid bias, applied to a sample of the universe that is intended to be explored, with qualitative responses, obtained through indirect observation, based on the statements made by the respondents, where the interest is not the specific subject but the population to which it belongs, where the only purpose is the assessment of knowledge, these answers being non-quantifiable due to their exploratory nature.

The research method applied has been rigorously based on García Ferrando's²³ survey technique, in the stages established for said method.

This type of questionnaire, previously subjected to open peer assessment, allowed the indicators of the variables involved to be collected in an organized manner, and allows these empirical variables on which information is desired to be translated, into specific questions that offer reliable²⁴ and valid answers for the objective. of this work.

In the process of data interpretation and analysis, the anonymized processing of the personal data of the respondents was maintained,

in which there was no participation of third parties. The primary data were collected with a systematic approach, observed and analyzed to elaborate the results.

These are two independent questionnaires, designed [25] with closed questions (pre-coded), clear, short, easy to interpret, structured, individual, to reflect the situation regarding knowledge, with two options <yes / no>, with simple coding; In some of them, open sub-items are established to complement the information collected, a preferred method in exploratory studies when the level of information of the respondents is unknown. The questions were organized in a funnel format, from the general to the most specific.

Then general and anonymous surveys are carried out, for an exploratory epidemiological survey as a consultation, in survey format, through questionnaires, taking as a universe; randomly selected sports teams, in different sports disciplines mostly practiced in Uruguay, where athletes and technical-health managers were consulted respectively as a method to collect data in the local environment.

The questionnaires were administered by a professional, each consisting of eleven objective questions, with guided answers in different options, where one of the questionnaires is applied to the technical-health team of the sports institution and the other to the athletes themselves, answered in a anonymous, unguided, with the aim of obtaining truthful answers, in a period of 6 months, from August 2021 to August 2023.

The teams and players consulted belong to the following institutions: Men's National Volleyball from Club Nacional de Fútbol, Men's Volleyball Club Atlético Peñarol, Men's Volleyball from Club Unión, Miramar Basket-ball Club for women, Miramar Basket-ball Club for men, Social Club and Deportivo Stokolmo (basketball), Club Nacional de Fútbol (youth - men's and women's soccer), Club Atlético Peñarol (youth - men's and women's soccer) Club Social y Deportivo Urunday Univeristario Men's Basketball, Defensor Sporting Club de Fútbol (men's), Montevideo Wanderers Men's Club Soccer, Club Atlético Fénix Men's Soccer.

The questionnaires applied in each of the study groups are described below.

Results to highlight

In the analysis of the responses obtained, it is observed that 62% of the athletes consulted consider that oral health can have a direct effect on their sports performance but do not know what the causes, effects or risk factors associated with it are.

Another fact worth highlighting is that 94% of the basketball, soccer and volleyball players of the teams consulted never used any type of oral or facial protection such as a mouthguard or helmet, or skin and mucous membranes such as sunscreen, during sports

ATHLETIC DISCIPLINE:
EQUIPMENT:.....
SPECIALITY/POSITION:
JOIN THE TEAM FROM:.....
CONSENT: By answering this questionnaire, I give my consent for the data from the answers to the questions posed to be used with scientific and study value, safeguarding personal data .
QUESTIONS:
DO YOU KNOW THE RELATIONSHIP THAT EXISTS BETWEEN ORAL HEALTH AND THE ATHLETE'S SPORTS PERFORMANCE?
A) YES B) NO
2- DO YOU KNOW OR HAVE YOU RECEIVED SPECIFIC TRAINING ON ORAL CAVITY AND FACIAL MASS PATHOLOGIES ASSOCIATED WITH SPORTS PRACTICE? (The question refers to dental and mucosal pathologies that originate from sports practice and the habits inherent to it)
A) YES B) NO
3- DO YOU RECOMMEND ENERGY OR ISOTONIC DRINKS TO ATHLETES?
A) YES B) NO
IF YES, DO YOU KNOW THE EFFECT ON THE DENTAL STRUCTURE?
A) YES B) NO
IF YES, DO YOU MAKE ANY SPECIFIC RECOMMENDATIONS AFTER INGESTION?
A) SO, THAT? B) NO
4- DO YOU RECOMMEND THE USE OF SOME TYPE OF PROTECTION IN SPORTS TRAINING OR COMPETITIONS?
A) SO, THAT? B) NO .
5- DO YOU KNOW THE TYPES OF MOUTH PROTECTORS (PB) THAT EXIST?
A) YES B) NO
IF YES, WHICH DO YOU RECOMMEND? (Open answer)
6- IN THE TEAM THAT YOU MEMBER OR HAVE MEMBER, HAVE YOU DECIDED ATHLETES WHO ARE PREFERENTLY MOUTH RESPIRATORS?
A) YES B) NO
7- HAVE ANY OF THE ATHLETES MENTIONED SLEEP DISORDERS, DEEP SNORING OR TOOTH GRINDING TO YOU?
A) YES, WHICH? B) NO
8- HAVE YOU WITNESSED TRAUMA OF THE ORAL CAVITY OR THE CRANIOFACIAL MASSIVE IN COMPETITIONS?
A) YES B) NO
9- DO YOU KNOW THE CONSEQUENCES OF BRUXISM ON THE SPORTS PERFORMANCE OF ATHLETES?
A) YES B) NO
10- DO YOU PERCEIVE THIS SPORT AS A HIGH RISK DISCIPLINE IN RELATION TO OROFACIAL PATHOLOGIES?
A) YES B) NO

Table 1: Questionnaire n°1 addressed to technical health teams of sports institutions in the eastern republic of uruguay.

ATHLETIC DISCIPLINE:
SPORTS INSTITUTION:
AGE:
SEX:
WEIGHT :
HEIGHT :
DATE :
CONSENT: By answering this questionnaire, I give my consent for the data from the answers to the questions posed to be used with scientific and study value, safeguarding personal data .
QUESTIONS: (INDICATE YOUR ANSWER WITH A CROSS)
1- DO YOU CONSIDER THAT YOUR ORAL HEALTH CAN HAVE A DIRECT EFFECT ON YOUR SPORTS PERFORMANCE?
A) YES B) NO
2- HAVE YOU SUFFERED ANY MAJOR INJURY DURING SPORTS PRACTICE TO THE FACE, MOUTAL CAVITY OR TO ANY TEETH?
A) YES B) NO

DO YOU CONSUME ENERGY OR ISOTONIC DRINKS?
A) YES. B) NO
4-DO YOU USE ANY TYPE OF PROTECTION DURING SPORTS PRACTICE SUCH AS: SUNSCREEN, MOUTH PROTECTION, HELMET?
A) YES B) NO
5- HAVE YOU EVER USED MOUTH PROTECTOR?
A) YES B) NO
IF THE ANSWER IS YES, WHAT WAS THE CAUSE?...
IF THE ANSWER IS YES, DID YOU USE A MOUTHGUARD PURCHASED IN SPORTS HOUSES OR CUSTOM MADE BY A DENTIST?
6- DO YOU KNOW IF YOU PRESENT SIGNS OF BRUXISM, SUCH AS CLESSING OR RUBING YOUR TEETH (GRINDING) DURING THE DAY OR NIGHT?
A) YES B) NO
7- DO YOU FREQUENTLY WAKE UP WITH A FEELING OF MUSCLE TIRED IN YOUR FACE, PAIN IN YOUR TEETH OR HEADACHE?
A)YES B) NO
IF THE ANSWER IS YES, WHICH?
8- HAVE YOU EVER USED SLEEPING PLATES? (called "rest plates" used to prevent teeth clenching during the day or night)
A) YES B) NO
9- YOU HAVE EXPERIENCED PROLONGED PERIODS IN WHICH YOU FELT A SENSATION OF DRY MOUTH (e.g. prior to a competition)
A) YES B) NO
DURING EXERCISE, DO YOU FEEL THAT YOU BREATHE PREFERENTIALLY THROUGH YOUR MOUTH OR NOSE?
A) MOUTH
B) NOSE

Table 2: Questionnaire n°2 aimed at athletes who practice some sports discipline in a form professional or amateur, at least 4 times a week in sports institutions of the republic eastern uruguay.

practice, 6% of these players have used a mouthguard, where 5% use pre-made standard commercial protectors and 1% have ever used a mouthguard made by a dental professional.

40.5% of athletes admit to consuming isotonic or energy drinks, without compensatory measures.

Athletes consulted about how they feel during exercise in terms of respiratory type, 72% consider themselves preferably oral breathers, among the remaining 28%, although they are considered nasal type breathers, the majority acknowledge feeling a sensation of dry mouth.

In the case of the consultation made to a representative of the technical-health team, with the objective of knowing the relevance of oral health in the context of sports in our local environment, where the universe was made up of Sports Doctors, in some cases and in other Trainers, kinesiologists, since in our environment, not all teams have a Doctor of Medicine specializing in Sports and Exercise Medicine as a health reference.

The responses obtained reflect that; 40% confirm not knowing the direct relationship that exists between oral health and sports performance.

60% of those consulted mention not recommending isotonic drinks and the remaining 40% who do recommend them do not indicate compensatory measures, nor do they know the real effect on the structure of tooth enamel.

With respect to the indication of mouthguards, 50% do not indicate them, and almost the remaining 50% indicate and know exclusively the standard, commercial, thermo-adaptable mouthguards that are available in sports stores, exceptionally in one of the cases, the The coach indicates individualized and correctly adapted mouthguards that are obtained by taking an impression of the athlete’s dental arch.

In relation to bruxism as a pathology, 60% respond that they do not know the consequences of this pathology on sports performance.

When inquiring about the predominant respiratory type of athletes, the results obtained indicate that 80% of the health representatives state that athletes are preferably nasal breathers, a fact that contrasts with the responses of the players mentioned above in this work. where 72% perceive themselves to be predominantly mouth breathers. To obtain accurate data regarding the respiratory type, a functional clinical analysis in statics and

dynamics is necessary, which is not the objective of the study, but rather to demonstrate that there is a need for an exhaustive analysis in the normal development of the function of the deprotista to being able to work, in order to enhance sports performance.

Conclusions

From this consultation, it can be concluded that at a general level the situation in our environment indicates that we are faced with athletes with little knowledge of the importance of oral health in sports practice and risk factors associated with it, where the role of Dentistry, in Clubs and Institutions in the Eastern Republic of Uruguay, is currently scarce, almost non-existent and there is no perceived assessment of the direct relationship between oral health and sports performance.

The percentages expressed above and the scarcity of bibliographic material regarding the development of Dentistry in sports, available and reviewed, reflect the importance of promoting research in the area, creating multidisciplinary teams, aimed at optimizing the sports performance of athletes, where risk factors associated with sports practice are analyzed in greater depth and preventive actions in oral health are developed, in order to comprehensively address the health of athletes, both individually and collectively.

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