



ORAL HEALTH AND ITS INFLUENCE ON SPORTS PRACTICE

¹Thais Santos Schroll, ²Joelbert Benigno de Carvalho, ¹Victor A. Whately Nascimento, ¹José Sani Neto, ²Heloisa Fonseca Marão, and ^{*1,2}Caio Vinicius G. Roman-Torres

¹Department of Dentistry, Metropolitan University of Santos, SP, Brazil

²Department of Dentistry, University Santo Amaro, SP, Brazil

ARTICLE INFO

Article History:

Received 27th April, 2018
Received in revised form
27th May, 2018
Accepted 09th June, 2018
Published online 30th July, 2018

Key Words:

Dentistry,
Evidencebased review,
Teeth.

ABSTRACT

Alternative One of the main elements responsible for influencing athletes' lives is health. Mouth problems such as temporomandibular joint disorders (TMD), periodontal disease, occlusion disease and dental losses can variation of performance and even distance from athletes in training and competitions. Oral diseases can directly interfere with the general health of the individual as can be observed in different studies. The objective of this literature review is to report and evaluate through a systematic review the importance of oral health in sports practice. There is a shortage of literature on oral health recommendations for patients with these specific dietary needs. Athletes have specific dietary needs to improve physical performance, and oral health professionals can add value by developing personalized prevention and treatment protocols to help athletes maintain their oral health. There are many potential challenges to the oral health of athletes, including nutritional, oral dehydration, exercise-induced immune suppression, lack of awareness, poor health behaviors, and lack of prioritization. However, theoretically, oral diseases are preventable by simple interventions with good evidence of efficacy. After this systematic review we can conclude that the dentist should be increasingly present in the practice of sports, regard less of modality and amateur or professional level.

Copyright © 2018, Thais Santos Schroll et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Thais Santos Schroll, Joelbert Benigno de Carvalho, Victor A. Whately Nascimento, José Sani Neto, Heloisa Fonseca Marão, and Caio Vinicius G. Roman-Torres 2018. "Oral health and its influence on sports practice", *International Journal of Development Research*, 8, (07), 21841-21843.

INTRODUCTION

The practice of sports from amateur to professional requires that the individual be trained and not be able to perform and perform the activities. The need to perform increasingly unreachable records requires athletes to train intensively to prepare themselves for maximum performance during competitions. For results rates to be achieved, the expected effects should be subject to a formula for competing without the risk or increase in physical performance (McGovern, Spolarich, Keim, 2015). To achieve an ideal performance in competitions, the athlete needs a physical body and the integration of physiological, psychological, biomechanical, genetic, facilities and tactical elements, age, as well as a sophisticated training, the best qualities, recovery potential,

neuromuscular efficiency, motivation to obtain volume limits and intensity of training (Kerr, 1983; Knaipk *et al.*, 2007; Needleman *et al.*, 2016). One of the main elements responsible for influencing athletes' lives is health. Mouth problems such as temporomandibular joint disorders (TMD), periodontal disease, occlusion disease and dental losses can affect variation of performance and even distance from athletes in training and competitions (Azodo and Osazuwa, 2013; Ashley *et al.*, 2015, Gallagher *et al.*, 2018). Dental care can improve athletes' performance by promoting oral health: preventing nutrient circulation during exercise, promoting resistance to sports activities (Broad and Rye, 2015), guiding foods and medications that can be ingested and provoked damage to teeth, making mouth guards and protecting them from trauma, meaning a participation encompasses a triad prevention, treatment and rehabilitation. To do so, there is a need for a team of dental surgeons of different specialties to attend to all dental needs, such as periodontics, endodontics, prostheses and implants, orthodontics / functional orthopedics of the jaw, surgery and traumatology buco-maxillofacial Oral diseases can

*Corresponding author: ^{1,2}Caio Vinicius G. Roman-Torres

¹Department of Dentistry, Metropolitan University of Santos, SP, Brazil

²Department of Dentistry, University Santo Amaro, SP, Brazil

directly interfere with the general health of the individual as can be observed in different studies. Mattila *et al.* reported that there is a possibility that bacterial endotoxins from periodontal disease or other oral disease may be related as a risk factor for myocardial infarction. Dental caries and periodontal disease alone or together are more common among patients with myocardial infarction-related problems than among the control group. The high prevalence of oral diseases turns the mouth into a kind of deposit of microorganisms capable of causing heart and vascular diseases. Periodontal disease is an important feeding pathway of this mechanism, Janket *et al.* discussed this aspect supported by the work of Choi *et al.* which demonstrated in immunological studies the connection between the bacterium *Porphyromonas gingivalis*, exclusively resident in the oral cavity, and atherosclerosis. Infectious foci of dental origin should be eliminated immediately upon arrival of any patient for initial oral diagnosis for treatment purposes. An athlete must always be at the peak of his physical condition, if there is an infectious mouth focus supplying microorganisms into the bloodstream, muscle, shoulder and knee injuries may be more frequent and difficult to recover (D'Ercole, *et al.* 2016). For this reason, this should be the primary focus of the clinician in the initial treatment of an athlete patient, the first phase of treatment. In addition to these inflammatory and infectious factors, the consumption of isotonic beverages during training and competitions should also be carefully observed, as the laughter of dental lesions increases significantly (Broughton, Fairchild, Morgan, 2016). The preparation of mouth guards is part of the procedures that must be performed by the dentists, making them properly will not interfere with breathing and will certainly protect the oral cavity from trauma. Consultation with the dental surgeon should be part of the initial and periodic protocol for sports practice. The objective of this literature review is to report and evaluate through a systematic review the importance of oral health in sports practice.

MATERIALS AND METODOLOGY

This study had as methodology the active search for information in the databases of the Latin American and Caribbean Center for Health Sciences Information, MEDLINE, LILACS and BBO, as well as the SciELO virtual library. It was sought to carry out the bibliographic research on the two central themes of this work: *oral health and athletes, oral problems in athletes, dentistry sports, sports and oral health, sports and teeth*. Selected articles were published in English between 1983 and 2018.

DISCUSSION

The Sports Dentistry (SD) acts in the prevention, maintenance and treatment of oral and facial injuries, as well as in the collection and dissemination of information on dental traumatism, besides stimulating research also establishes as a duty for the dentist to detect problems related to the stomatognathic system of the athlete. There is a shortage of literature on oral health recommendations for patients with these specific dietary needs. Athletes have specific dietary needs to improve physical performance, and oral health professionals can add value by developing personalized prevention and treatment protocols to help athletes maintain their oral health. Initial determination of risk factors through clinical exams and subsequent education with oral hygiene instructions will likely provide great benefits to an athlete's

future oral health. Experience of oral disease is different by sport, the prevalence in elite and professional athletes is substantial, with common performance impacts. Regular screening and use of effective oral health promotion strategies can minimize performance impacts from poor oral health (Gallagher *et al.*, 2018). Oral problems most affect the masticatory process, and can often present painful symptomatology, influencing the choice and acceptability of foods, reducing chewing time, slowing the digestive process due to poor grinding of foods (Kerr, 1983, Fernandez *et al.*, 2013). In addition, they reduce the intake and absorption of nutrients such as folic acid, dietary fibers and antioxidants like vitamin C and beta carotene, but increase the intake of saturated fats and cholesterol. Restricting the ingestion of certain foods can affect the health of the athlete, impairing recovery and risk the performance of certain activities that require maximum performance. In the practice of physical activities there is, if the energy metabolism occurs, the by-product transformation of the metabolic reactions.

One of the substances for medilactate, which helps the motor activity during its contraction, serving as an energysource. Intense activities can influence oral pH and consequently cause possible lesions in oral structures since they are associated with other factors, such as poor hygiene, high sugar diet, isotonic, and thus bring harm to the oral health of athletes and amateur athletes. Competitions sports have become increasingly popular with amateurs and because of their training and nutrition habits, practitioners are likely to be at different risk levels for oral health compared to the average non-exercising, mainly erosive dental wear and dental caries, as well as alterations in salivary parameters, due to the consumption of isotonic or excessively low-pH drugs (Hanke-Herrero *et al.*, 2013). Physicians, coaches, athletes and dentists should recognize the importance of hydration and water use as the first choice for athletic performance and to maintain optimal salivary flow. Effective preventive protocols for caries, erosion and gingivitis include limitation of adhesiveness, frequency, and duration of exposure to carbohydrates and acidic foods and fluids; maintaining adequate hydration; water rinsing after consumption of carbohydrates and acidic foods and beverages and optimization of exposure of fluoride (Frese *et al.*, 2015). Although these sports nutrition guidelines are readily available to all athletes, many misinterpret information or do not use food and fluids in the most appropriate way, such as those who drink sports drinks during sedentary activities (Broughton, Fairchild, Morgan, 2016). Periodontal diseases, caused by the lack of adequate hygiene, ie, accumulation of dental biofilm, stimulate the production of proinflammatory cytokines that cause several systemic problems. The drop in yield may be related to periodontal disease, which is sometimes neglected by non-specialist dentists. Elevated levels of IL-6 in plasma have the property of inducing fatigue, which can affect both mood and athletic performance. Its effects, however, are not only due to the presence of IL-6 but to prolonged exposure, which causes intolerance and / or increased sensitivity to this cytokine. Athletes with worse periodontal status had higher levels of creatine kinase. Microbial markers, immunological status and sports characteristics are important for the establishment of guidelines for training load management in order to minimize physical stress and the risk of oral infection (D'Ercole *et al.*, 2016). To date, there is no evidence that has investigated the use of drugs in dentistry with doping. The medications that can be administered by the dentist and which may involve doping

would be basically corticosteroids and anesthetics that are not considered as prohibited substances, but should also be mentioned since their use must be notified (Tandon, Bowers, Fedoruk, 2015). Measures such as awareness, preventive measures, diagnosis and early treatment are extremely important to avoid the onset and aggravation of oral pathologies (McGovern, Spolarich, Keim, 2015). In researches with Olympic athletes, it was found that, despite showing high levels of performance and conditioning, their oral health was considered equal or inferior compared to the general population. While some countries and federations have assistance programs, in others athletes are unable to pay for dental treatment. Another reason for neglect may be that athletes were not educated about the importance of good oral health for their performance and about the fact that regular maintenance of the teeth and oral cavity is vital to ensure good systemic health. The dentist should encourage the athlete to consult an experienced sports nutritionist to ensure that the principles of sports nutrition are appropriately applied to the type, frequency, and duration of the exercise, considering the individual's oral health needs (Broad, Rye, 2015). Evidence suggests an impact of oral problems in athlete training and performance (Azodo and Osazuwa, 2013, Needleman *et al.*, 2016). There are many potential challenges to the oral health of athletes, including nutritional, oral dehydration, exercise-induced immune suppression, lack of awareness, poor health behaviors, and lack of prioritization. However, theoretically, oral diseases are preventable by simple interventions with good evidence of efficacy (Needleman *et al.*, 2015). After this systematic review we can conclude that the dentist should be increasingly present in the practice of sports, regardless of modality and amateur or professional level.

REFERENCES

- Ashley P, Di Iorio A, Cole E, Tanday A, Needleman I. 2015. Oral health of elite athletes and association with performance: a systematic review. *Br J Sports Med.*, Jan; 49(1):14-9.
- Azodo CC, Osazuwa O. 2013. Dental conditions among competitive university athletes in Nigeria. *Odontostomatol Trop.* Mar; 36(141):34-42.
- Broad EM, Rye LA. 2015. Do current sports nutrition guidelines conflict with good oral health? *Gen Dent.*, Nov-Dec; 63(6):18-23.
- Broughton D, Fairchild RM, Morgan MZ. 2016. A survey of sports drinks consumption among adolescents. *Br Dent J.*, Jun 24; 220(12):639-43.
- Choi J, Chung S, Kang H, Rhim B, Kim S. 2002. Establishment of porphyromonasgingivalisheat-shock-proteinspecificT-cellline from atherosclerosis patients. *J Dent Res.*, 81:344-8.
- D'Ercole S, Tieri M, Martinelli D, Tripodi D. 2016. The effect of swimming on oral health status: competitive versus non-competitive athletes. *J Appl Oral Sci.*, Apr; 24(2):107-13.
- Fernandez JB, Lim LJ, Dougherty N, La Sasso J, Atar M, Daronch M. 2012. Oral health findings in athletes with intellectual disabilities at the NYC Special Olympics. *Spec Care Dentist.*, Sep-Oct;32(5):205-9
- Frese C, Frese F, Kuhlmann S, Saure D, Reljic D, Staehle HJ, Wolff D. 2015. Effect of endurance training on dental erosion, caries, and saliva. *Scand J MedSci Sports.* Jun;25(3):e319-26
- Gallagher J, Ashley P, Petrie A, Needleman I. 2018. Oral health and performance impacts in elite and professional athletes. *Community Dent Oral Epidemiol.* Jun 25. doi: 10.1111/cdoe.12392. (Epubahead of print)
- Hanke-Herrero R¹, López Del Valle LM, Sánchez C, Waldman HB, Perlman SP. 2013. Latin-American Special Olympics athletes: evaluation of oral health status, 2010. *Spec Care Dentist.*, Sep-Oct;33(5):209-12
- Janket S, Meurman JH, Nuutinen P, Qvarnström M, Nunn EM, Baird AE, *et al.* 2006. Salivary lysozyme and prevalent coronary heart disease possible effects of oral health on endothelial dysfunction. *Arterioscler Thromb Vasc Biol.*, 26:433-4
- Kerr L. Dental problems in athletes. 1983. *Clin Sports Med.*, Mar; 2(1):115-22.
- Knapik, JJ, Marshall SW, Lee RB, Dajakjy SS, Jones SB, Mitchener TA, *et al.* 2007. Mouth guards in sports activities: history, physical properties and injury prevention effectiveness. *Sports Med.*, 37(1):117-44.
- Matilla KJ, Pussinen PJ, Paiu S. 2005. Dental infections and cardiovascular diseases: A review. *J Periodontol.*, 76(11):1085-8.
- McGovern LA, Spolarich AE, Keim R. 2015. A survey of attitudes, behaviors, and needs of team dentists. *Gen Dent.*, Nov-Dec; 63(6):61-6.
- Needleman I, Ashley P, Meehan L, Petrie A, Weiler R, McNally S, Ayer C, Hanna R, Hunt I, Kell S, Ridgewell P, Taylor R. 2016. Poor oral health including active caries in 187 UK professional male football players: clinical dental examination performed by dentists. *Br J Sports Med.*, Jan; 50(1):41-4.
- Needleman I, Ashley P, Fine P, Haddad F, Loosemore M, de Medici A, Donos N, *et al.* 2015. Oral health and elite sport performance. *Br J Sports Med.*, 2015 Jan; 49(1):3-6
- Tandon S, Bowers LD, Fedoruk MN. 2015. Treating the elite athlete: anti-doping information for the health professional. *Mo Med.*, Mar-Apr;112(2):122-8.
