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Commentary

Comentário

Oral Health in Focus for High-Performance Athletes

A saúde bucal em foco para os atletas de alto rendimento

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Abstract

Introduction: Sports competition is growing technological and scientifically. Studies showed relationship between oral health and elite athletes' performance. Knowing the interaction between stomatognathic system behavior and the athlete's habits helps the dentist to develop and implement preventive-curative planning for the maintenance of general health, contributing to athlete's positive performance.

Objective: Give an overview and highlight some aspects on oral conditions as cause or consequence related to elite athletes' performance, aiming to contribute to the better professional practice of sports' performance.

Conclusion: The preventive or curative dental health monitoring is imperative to guarantee the maintenance of the elite athletes' performance. Multidisciplinary research must be developed to demonstrate how Dentistry can contribute to performance improving on that athletes' category. Investment in preventive, interceptive and curative Dentistry in kids and teenage athletes can directly impact on their performance, favoring their professionalization. The interaction between Dentistry and Nutrition must exist to prevent oral health damage caused by athletes' diet.

Keypoints

- Infections of odontogenic origin, alter the immune system and the inflammatory processes, altering the general functioning of the body.

- Discrepancies in the bone bases, jaw and maxilla can impact changes in posture, breathing, nutrition and sleep quality.

- Dehydration and stress are predisposing to xerostomia (saliva reduction) – a caries risk factor.

Keywords: oral health, athletes, dentistry, sport, stomatognathic system.

Resumo

Introdução: A competição desportiva está cada vez mais tecnológica e científica. Estudos na área da Odontologia mostram relação entre a saúde bucal e o desempenho do atleta de alto rendimento. O conhecimento do comportamento do sistema estomatognático, dos hábitos dos atletas da prevenção odontológica, ajudam o cirurgião-dentista, a elaborar e executar um planejamento preventivo-curativo visando a manutenção da saúde geral, influenciando positivamente o desempenho do atleta.

Objetivo: Objetivou-se dar uma visão geral e salientar alguns aspectos que possam contribuir para o melhor desempenho dos atletas de alto rendimento em relação às condições bucais como causa ou como consequência, da prática profissional de esportes.

Conclusão: O acompanhamento odontológico aos atletas de alto rendimento, de forma preventiva ou curativa, é imperativo para a garantia da manutenção do seu desempenho físico. Pesquisas multiprofissionais ainda precisam ser feitas para que a Odontologia possa contribuir mais diretamente na melhoria do desempenho desta categoria

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de atletas. O investimento na Odontologia preventiva, interceptativa e curativa nos atletas mirins e juvenis pode repercutir diretamente no seu desempenho, favorecendo a sua profissionalização. A interação entre a Odontologia e a Nutrição deve existir para que a dieta do atleta não prejudique a saúde bucal.

Palavras-chave: saúde bucal, atletas, odontologia, esporte, sistema estomatognático.

Pontos-Chave Destaque

- Infecções de origem odontogênica, alteram o sistema imunológico e os processos inflamatórios ,alterando o funcionamento geral do corpo.

- Discrepâncias nas bases ósseas, mandíbula e maxila podem repercutir em alterações na postura, respiração, nutrição e qualidade do sono.

- A desidratação e o estresse são predisponentes à xerostomia (redução da saliva) – um fator de risco à cárie.

Oral Health in Focus for High-Performance Athletes

Sports competition is growing technological and scientifically because milliseconds can be decisive. The athletes' performance depends on the interaction between human body systems with metabolism. Physiologic changes impact the entire body's functioning. In that context, the study of the stomatognathic system (SS) and its correlation with the physiological aspects of health related to performance can contribute improve performance in sports.

The SS is designed with static structures (mandible, maxilla, dental arches, temporomandibular joints, and hyoid bone) and dynamic structures (masticatory, supra and infrahyoid muscles and tongue, lips and cheek) that act together for the chewing, swallowing, breathing, phonation and sucking functions(1). In carrying out these functions there is a neuromuscular relationship with the rest of the body. Literature exhibits several studies that related malocclusion (inadequate intra and / or interarchal dental relationships) with body posture(2-4), hence there is the study interest on the relationship of dentistry with sports' biomechanics. Oral health involves the condition of the teeth and the way how they occlude; also involves the condition of correlated structures, including soft and hard tissues and the temporomandibular joints, with all their complexity. Odontogenic infections alter the immune system and the levels of inflammatory chemical mediators altering the general functioning of the human body, besides generating pain, can lead to tooth loss, influencing its diet and reducing its quality of life(5-8). Discrepancies in the jaws, regarding size, width and how they relate to each other and the cranial base, can cause changes in posture, breathing, nutrition, and sleep quality(2,4,5).

Ashley et al(6), conducted a systematic review, concluded that oral health in high-performance athletes is deficient and the caries prevalence was of 75%, among other problems such as

periodontal disease, dental erosion, and dental trauma. Those odontogenic diseases negatively affect athletes' training and competition performance(7,8).

This commentary aims to summarize and highlight some aspects that may contribute to the better elite athletes' performance regarding oral conditions as cause or consequence of professional sports practice.

Routines in sports practice as determinants for oral health damage

Each sport has its own peculiarities and should be analyzed individually to avoid oral health damage and to promote prevention. Thus, the sports dentist should be aware of athlete eating habits, exercise and schedule time that it follows, thus being able to individualize the dental treatment.

The risk of dental caries, periodontal disease, and dental erosion increases due to acidic and sugar-rich drinks ingestion, high-frequency of high-calorie diets, and stress caused by exhaustive training(9). Stress also contributes to the development of dental clenching and bruxism(7), with consequent abfraction, erosion and abrasion injuries. Moreover, dehydration and stress predispose to xerostomy(10), adding one more risk factor to caries disease, periodontal disease, mucositis, and fungal infection, in addition, bad breath.

Water sports, which involve training in pools with low pH treated water, can lead to tooth erosion injuries. Besides, chlorine contributes to teeth staining and dental calculus formation, predisposing the athlete to periodontal disease(11).

Finally, contact or combat sports increase the likelihood of dental and facial trauma, indicating the use of adequate protection, as the different types of mouthguards(12,13).

Oral health's impact on sports performance

The buccal environment has a rich microflora that, when balanced in a health situation, does not cause systemic change and is not harmful. However, in the presence of odontogenic infections, inflammation mediators and pathogenic microorganisms spread through the bloodstream, causing damage to other systems, such as the cardiovascular and musculoskeletal systems(6,9).

Considering oral functions, it has been discussed how malocclusion and the joints temporomandibular function can affect the athlete's performance. Literature is controversial about the relationship between posture and balance and occlusion(2-4,6,14,15). Given the neuromuscular system and the close relationship of the stomatognathic system with the skull and the cervical-scapular muscle system, a change in jaw position seems to modify posture, which could influence performance in sports.

Understanding and reflecting on the relationship between oral health and sporting performance

Professional practice of sports brings to focus the responsibility to athletes to take care of their body, physically and mentally. The medical, physiotherapeutic, nutritional and psychological follow-up seems to be already established to guarantee the athletes' health and performance. However, surprisingly, oral health is not included among the priorities in their planning. Odontogenic infections are originated from carious lesions, periodontal diseases, and traumas, by friction or impact. Except for the trauma due to impact, these situations are entirely predictable and controlled by planning dental care.

Considering that the routine training is cyclical, becoming more intense near the competitions and, during those periods it becomes impracticable to stop to

perform any dental treatment. In that perspective, it is essential that a protocol of dental care be included in training schedule time and their intervals for the best practice, preventing complications in the decisive moments for the athlete. Such protocol comprised of examinations and restoration of oral health can prevent dental pain, inflammation or infections, temporomandibular disorders, or even, traumas. These oral health problems can damage other body systems and even make it impossible for the athlete to compete. Furthermore, drugs needed to treat an odontogenic problem can also interfere with doping tests and should be used with caution near competitions.

High rates of dental caries, periodontal disease and dental erosion among elite athletes, in many countries, demonstrate that there is a lack of information about the benefits of preventive and outpatient oral health care needing guidance(5,16). To prevent dental caries and dental erosion related to frequent intake of supplements, carbohydrates and acidic beverages, the dentist and nutritionist, should jointly participate in the athlete's dietary orientation, ensuring their nutrition and oral health concomitantly.

Although the literature is controversial about the stomatognathic system and musculoskeletal system relation(2,4,15), occlusal problems like a crossbite, transverse maxillary deficiency and other factors causing mandibular deviation and neuromuscular adjustment, should be treated from the early sportive . Hence, considering the young athletes' potential to sportive development, achieving high performance and professionalizing themselves, the oral health care, as preventive, interceptive and curative form, from kids and teenage sports to all categories will lead the Dentistry to contribute in fact to a significant increase in its performance.

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