RSBO

ISSN:
Electronic version: 1984-5685
RSBO. 2015 Oct-Dec;12(4):352-5

Original Research Article

Knowledge of triathlon athletes about the relationship between oral health and performance

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Received for publication: August 28, 2015. Accepted for publication: September 29, 2015.

Keywords: dental caries; periodontal disease; cariogenic diet.

Abstract

Introduction: The triathlon athletes have great energy loss due to physical activity of high intensity and resets are based on a high-carbohydrate diet and acid elements (acids replacers), both substrates to decay and periodontal disease. **Objective:** This study aimed to evaluate, through a questionnaire whether triathlon athletes relate oral health to their physical performance. **Material and methods:** We developed a questionnaire with 20 objective questions and applied during marathons and at fitness centers, in the city of Curitiba, in 2015. **Results:** The majority of athletes use supplements with high levels of carbohydrates and acids for energy replacement daily and do not brush their teeth after workouts / nutrition. Of the 254 respondents, only 96 relate oral health to their performance in sports. **Conclusion:** The athletes do not relate the importance of oral health care to performance and largely do not brush the teeth after the activities, leaving the oral environment more susceptible to the onset of periodontal disease and caries, which can decrease their performance. It is necessary to inform triathlon athletes about the relationship oral health x systemic health x performance, as well as the dentists about the need of oral health care for these athletes.

Introduction

A population performing some type of moderate physical activity have smaller number of diseases such as, lower risk of developing cancer and infections. In a general context, physical exercise plays an important role in quality of life. The triathlon is a sport that combines, sequentially and without interruption, swimming, cycling, and running. The official races (for men and women) can have a maximum of 51.5 km of the total route. It is a sport that requires great athlete's dedication to training, good nutrition, and also quite large power consumption [4].

Immunological factors are associated and are developed by constant practice of physical exercises, such as an improvement in immunological responses against infections and better healing of muscle injuries [13].

Physical training is indispensable to improve the performance of high-performance athletes. Each sport requires specific training, and energy replacement is crucial to continue the activity, maintain, and improve of athletic performance. Replacement is normally carried by the intake of liquid and paste carbohydrates, and replacers of mineral salts with acidic composition [11]. The characteristics of the athlete's nutrition provide and give subsidies to the development of periodontal disease and caries. It is known that substrate necessary for the development of these diseases is part of athletes' supplementation [9].

The most prevalent oral diseases, periodontitis and caries, are related to dental plaque [12]. Other factors contribute to the development of these diseases, such as decreased saliva production during the physical exercise; the time period that the substrate is in contact with teeth and periodontal tissues; lack of oral hygiene after training and the use of acid replacers. These factors predispose to oral diseases and need to be controlled [3].

Several studies have been conducted on the relationship between periodontal disease and caries with systemic health. It is known that periodontal disease affects the overall health as well as general health conditions may affect the onset and progression of periodontal diseases [12]. Dental plaque is a microbial biofilm formed by microorganisms tightly bound to the tooth surface and to each other [14]. The microbial composition is varied and remains relatively stable over time. However, when the microbiata homeostasis is broken, oral diseases may appear and increase the levels of cytokines, particularly tumor necrosis factor (TNF) and interleukin-6 (IL-6) [1]. These cytokines play an important role in the origin of muscle fatigue during exercise and oxidative stress after exercise. Muscle fatigue can cause muscular cramps when associated to exercise and leads to a reduction in its capacity of energy absorption, resulting in more susceptibility to injury [5]. In addition, the muscle fatigue increases the chance of proprioceptive errors and disorders in the interactions between the limb segments. Therefore, oral disease are potential risk factors for repeated sports injury [12]. Among the various systemic diseases, cardiovascular (atherosclerosis, stroke, and acute myocardial infarction), in addition to respiratory disease (pneumonia, bronchitis, and emphysema), have a strong relationship with periodontal diseases. Such diseases can cause serious damage to health, affect physical performance, and in extreme cases, lead to death. Therefore, oral health care is very important not only for the maintaining oral health, but also for the patient's general well-being. There are still few published prospective studies investigating the most frequently oral alterations found in athletes. Mostly, the studies in the literature discuss relevant aspects of the development of equipment for dental protection and / or traumatic injuries. Some diseases directly related to sport and its demands are the responsibility of the dentist, for example, eating disorders, whose first signs are visible in the oral cavity [9].

Material and methods

An easy, simple-comprehensive questionnaire was prepared, addressing issues such as:

- Age;
- Education;
- Number of daily toothbrushing;
- Type of toothbrush (bristles) used;
- Frequency of flossing;
- Gingival bleeding occurrence;
- Frequency of dental care;
- Last visit to the dentist;
- Smoking;
- Taking medications;
- Occurrence of injuries resulting from sports practice;
- Frequency of use of food supplementation;
- Nutritional counseling;
- Intake of sports drinks;
- Toothbrushing after training;
- Daily workout time;
- Weekly workout time;

- Relationship between oral health and performance as an athlete;
- Absences from training by pain in the teeth or gums.

Two hundred fifty-four triathlon athletes, aged between 18 and 65 years, of both genders (male and female) were interviewed. The questionnaire consisted of 20 objective questions and some describe the product used. The athletes signed a free and clarified consent form authorizing the application of the questionnaires.

The questionnaire was distributed at gyms and during marathons that took place in the city of Curitiba (PR) in 2015.

This study was approved by the Ethics Committee in Research of the Positivo University, under protocol no. #2011/80.

Results

The results were obtained based on tables and charts and will be demonstrated below. The data refer to the 254 participants.

Education: 7 respondents were in high school, 148 were undergraduates, 32 graduates, and 67 had complete higher education.

Toothbrushing: 92 reported brushing the teeth twice a day and 162 three times a day.

Toothbrush/bristle: 84 used soft bristle, 98 medium bristle, and 72 hard bristles.

Flossing: 32 used daily and 222 used sometimes.

Mouthrinsing: 162 used mouthrinses.

Gingival bleeding: only 26 reported bleeding.

Dental care: 186 were being followed-up.

Last visit to dentist: 3 did not remember, 56 reported less than one year, 186 from one to two year; and 9 more than two years.

Smoker athletes: only 8 smokers.

Use of de medication: none athlete used continue medication.

Injury during sports practice: 29 reported having suffered some type of injury during sports practice.

Use of supplemental feeding: 16 did not use, 182 used daily, and 56 sometimes.

Nutritional counseling: only 35 were under nutritional monitoring.

Use of isotonic drink: 86 used, 142 did not use, and 26 used sometimes.

Post-workout toothbrushing: 89 brushed their teeth after practicing, 125 did not brush, and 40 brushed sometimes.

Time of daily workout: 112 athletes practiced up to one hour and 30 minutes; 85 up to 2 hour; 42 up to 3 hours; and 15 practiced 4 hours or more, daily. 4

Number of practices per week: 95 practiced 3 days per week, 129 practiced four days per week, and 30 five days per week.

Relationship between oral health and performance: 98 athletes related oral health to performance.

Absence to practice due to pain and/or bleeding: 9 already missed practice due to this reason.

Discussion

The exercise plays a fundamental role in the quality of life. However, high-performance athletes, such as those who practice triathlon, some changes in diet and habits can make them more likely to develop oral diseases such as caries and periodontitis.

Sports Dentistry is a recent Dentistry Specialty in Brazil and aims to prevent and treat trauma, as well as oral diseases, of practitioners of people performing regular physical activity and high-performance athletes [2].

The American Dental Association (ADA), even in the 1950s, began to worry about the high number of cases series caused by sports practice, especially in football. With the increasing incidence of oral trauma, ADA began an awareness campaign targeted to athletes regarding the use of mouthguards. In 1983, the Academy of Sports Dentistry (ASD) in San Antonio, Texas was established. ASD is composed by dentists, coaches, and other professionals who are interested in Sports Dentistry or conducting research related to trauma in sports [7].

In this study, most of the athletes reported not flossing daily (222). It is known that daily flossing avoids interproximal caries and also inflammatory gum disease, common in high performance athletes [4].

Of the 254 respondents, 186 visited the dentist for more than 1 or 2 years. This data reveals the lack of knowledge about the relationship between oral health maintenance and sports practice. Most participants also reported not being a smoker (246), care with general health, and probably knowledge about the problems caused by smoking.

Most of the athletes reported using dietary supplementation with high levels of carbohydrates and acids for energy replacement daily (182) and not brushing their teeth after workouts / nutrition

(125), which leads oral cavity more susceptible to caries and periodontal disease. Of the 254 athletes, only 96 relate the importance oral health to their performance in sports. Few prospective studies that show the most frequent oral health changes found in athletes. Most studies in the literature discuss the relevant aspects of the development of mouthguards and/or traumatic injuries [7]. One reason is that the specialty is very recent [6]. It is important to discuss the relevance of the existence of these studies, as well as access to these studies by both athletes and dentists, since the dentists are responsible for the early detection of oral diseases and periodically systemic diseases.

Conclusion

It was observed that the athletes did not relate oral health to their performance. In addition, most athletes did not brush their teeth after performing its activities, leaving the oral environment more susceptible to the onset of periodontal disease and caries and may experience a decrease in athletic performance. It is necessary to inform triathlon athletes about the relationship between oral health x systemic health x performance, as well as educate the dentists about the importance of this expertise.

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