

REVIEW

The effect of oral health on performance of athletes and sports injuries: a mini review

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ABSTRACT

Oral health has a significant impact on athletes in terms of their general health, life quality, and performance. Recently, it has been found that oral health is affected by various factors such as nutritional habits, lifestyle routines, and so forth. These factors may also lead to negative impacts on the performance of athletes and even cause injuries although most athletes do not have awareness of it. Although few studies have been conducted regarding the relationship between oral health and its impact on athletes, poor oral health may cause negative effects on athletes including their life quality and performance. In addition, it may even cause sports injuries. There is a correlation between the impacts of poor oral health on athletes and their performance. To prevent poor oral health, there are many precautions such as changing nutritional habits and lifestyle and attending regular dental checks.

Keywords: oral health, sports injuries, elite sports performance

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INTRODUCTION

Oral health is defined by the WHO as “a key indicator of overall health, well-being, and quality of life” and it is known to contribute to the development of various diseases such as cardiovascular diseases, chronic respiratory diseases, and cancer. Therefore, poor oral health forms a risk factor for general health as well [1]. Since it may negatively affect general health, it is possible to argue that poor oral health might also play a key role in the training quality and performance of an athlete [2,3,4] by causing both physical and psychosocial problems and athletes might be even exposed to the risk of muscle injuries [5], causing more major problems in the long term.

Some of the main oral health problems that athletes mostly experience include caries [6], periodontal disease [7], and pericoronitis [8]. These problems caused by poor oral health are induced by various factors in individual patterns of athletes such as unhealthy nutritional habits [9,10] and external factors such as constitutional systems associated with oral health within countries [11]. As an example of the nutritional habits of athletes, in to obtain sufficient energy and support their performances, they prefer consuming energy drinks, bars, and gels, which contain high sugar rates and carbohydrates [12]. As a result of this, the elevated levels of consumption of sports drinks and nutritional support lead to negative impacts and problems on the oral health of athletes such as dental caries and erosion [9]. It is possible to state that individual routines and nutritional habits such as consuming meals high in sugar or even sipping sports drinks pose a risk factor for poor oral health [13]. When these facts are taken into consideration, it would

not be wrong to suggest that elite athletes are at high risk for poor oral health¹¹ and developing even injuries caused by their unhealthy nutritional habits.

On the other hand, another problem related to the oral health status of athletes is that although oral health plays a significant role in their overall health of them and affects their performances, awareness related to this issue is not raised among athletes. Besides, according to a study, precautionary control and care regarding oral health for athletes is not standardized and adopted in many countries [14]. Therefore, as long as an athlete does not prefer visiting a dentist of his/her own will, it may not be possible to control and monitor the oral health status of an athlete, which may result in health problems in further periods.

Apart from these factors, as it is argued before when an athlete has poor oral health and appropriate treatment is not implemented, there is a risk of reduced performance and even injuries, which will be explained in the next chapter.

PERFORMANCE AND SPORT INJURIES

As it is stated before, poor oral health has an impact on different components of an athlete’s life such as their overall health, training, and performance. One of these components is life quality [15], which is very essential at this point. Oral diseases induced by poor oral health may cause pain [4], lead to increased inflammation rates [16], and also could affect the life quality of an athlete in a negative aspect. As a result, the reduced quality of life brings about difficult circumstances for

an athlete and makes it hard to achieve full performance.

On the other hand, various studies conducted on the relation between oral health and other health problems, which may be possibly affected by oral diseases, indicate that there is a correlation between dental health and certain systemic disorders such as cardiovascular diseases [17] and this correlation forms a risk factor for athletes since their general health status as well as their performances may be negatively affected and they might even experience injuries, which could lead to unwanted results in their careers in the long term. For instance, one of the most common injuries that athletes experiences are muscle lesions, and this rate stated in a study is between 10% and 55% of all injuries [18,19,20].

In addition, studies prove that the most common oral diseases such as periodontitis and dental caries, which are dental plaque-related problems, may begin to lead to serious problems [21], and when microbial homeostasis in the formation of dental plaque disintegrates, it will lead to the development of oral diseases [22]. Oral diseases induced by the disintegration of dental plaque will produce high levels of cytokines; tumor necrosis factor (TNF- α) and interleukin-6 (IL-6) in particular and high levels of cytokines generally result in not only the formation of muscle fatigue during training but also oxidative stress after training [23,24]. Besides, muscle fatigue may lead to strain injuries by producing exercise-related muscle cramps and causing the devaluation of the energy-absorbing capacities of muscles. In addition to the risk of strain injuries, even after the treatment period of an injury, this condition may also provoke reinjuries [25] as long as oral

diseases are not approached with necessary concerns and treated profoundly.

DISCUSSION

When these data are taken into consideration, it would not be wrong to state that poor oral health has an impact on the performance of an athlete. For example, in a study, athletes report that they suffer from problems like oral pain, and their performances, as well as the volume and quality of their training, are affected negatively [26].

Another study carried out by Needleman et al., it is found that athletes reported not only physical impacts of poor oral health such as oral pain at the rate of 29.9% and difficulties while eating at the rate of 34.6% but also psychosocial effects such as smiling at the rate of 17.2%. In addition, 9% of athletes stated they had difficulties in engaging in training and competitions and 5% of them believe that their performances were affected [4].

On the other hand, although there are limited data or studies conducted regarding the relationship between poor oral health and muscle injuries, few studies suggest certain inputs related to it. For example, in a study conducted by Gay-Escoda et al., it is stated that there is a statistically significant relation between periodontal health and muscle injuries. Similarly, it is found that there is also a relation between both plaque index and periodontal pocket depth and muscle injuries [27].

Furthermore, to prevent poor oral health and abstain from muscle injuries in this way, there are various steps to be taken. For instance, in some studies, it is suggested that athletes may consume milk instead of sports drinks

[12,28,29]. Besides, since poor oral health and diseases related to it, are avoidable [30], according to the present data, it is recommended that the implementations for athletes include screening in terms of oral diseases, evaluation of hygiene, and guidance and education related to this issue provided by professionals should be arranged in a frequency of twice a year and before the beginning of the season [31].

CONCLUSION

In light of all these conducted studies and data related to oral health and its importance in sports, it is possible to suggest that there is a significant relationship between oral health and the performance of athletes as their general well-being and health are also affected by it. Poor oral health might also lead to unfavorable circumstances such as suffering from even muscle injuries. To avoid these health issues, athletes should be instructed in terms of the importance of their oral health and they should be guided by professionals so that they could consider their nutritional habits and arrange regular dental visits. Finally, athletes should be concerned about their oral health and take the necessary steps to prevent any problems in their sports careers.

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Author's contributions

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