



Play Safe-Sports Dentistry a Review

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Abstract

As per FDI definition, sports dentistry is branch of dentistry dealing with prevention and treatment of pathologies and injuries of oral cavity and stomatognathic system related to sports practice. The stomatognathic system is anatomical and functional system comprising the teeth, jaws and associated soft tissues, facial muscles and Temporomandibular joint (TMJ). It's a most recent upcoming field in Dentistry.

Contact sports can be very fulfilling in many ways but tooth and facial trauma can affects athletes in many aspects from, talking, eating, smiling and most important psychological impact which can leads to more serious consequences.

There is intimate relationship between an adequate oral condition and the performance of the athlete. The practice of sport and performance can be compromised by the presence of various oral problems. Oral disease directly or indirectly negatively impacts the sports performance.

This review discusses the importance of sports dentistry, type of Dento-facial injuries faced by elite athletes, responsibility of team dentist for early diagnosis of injury prone dentition, prevention and treatment of injuries and to educate sports team members for importance of oral health in sports.

Keywords: Mouth Guard; Face Shields; Psychological Health; Dento Facial Trauma; Occlusion; Contact Sports; Luxation; Splints

Abbreviations

FDI: Federation Dentaire Federation (World Dental Federation); WADA: World Anti Doping Agency; ADA: American Dental Association; TMJ: Temporal Mandibular Joint; USA: United State of America; CL 2 Div 1: Class 2 Division 1

Introduction

History

Oral and dental injuries in sports have been accepted in the past as part of the game in certain sports like hockey, rugby and American football. Dental and facial traumas are common sports related injuries. It has been widely reported and accepted that participation in sports carries the risk of sustaining dental injuries [1].

Sports dentistry was founded in late 1950s and early 1960s. Injuries in Oro- facial region in American football were seen frequently. Sports dentistry strongly recommended high school and college football to prevent dental injuries by mandating the use of mouth guard and face masks with football helmets. Implication of which decreased the injuries from 50% to 5% which led to the start of modern sports dentistry [21].

A study shows 13% trauma is oral in sports activities. Jackson proposed a systematic approach and how the dental professionals should interact with sports persons. He also emphasised the greater need of team dentist in high school and professional team [2,20].

The history of sports dentistry in Brazil happens concomitant with occurrence of major sporting event and refers to the time of

world cup of 1962 and 1966. In 1958 Dr. Trigo, performed 118 extractions on 33 players as a dentist of Fluminense football club. He noticed the players who took longer to recover were having dental infections. After elimination of dental infections the recovery was faster. Until 1990s only few dentists accompany the sport team [3,4].

In Athens Olympics 2004, dentistry was most searched service after physiotherapy. The dental clinic was part of the medical care field area and 28 dentists treated 658 athletes with sports related injuries. Mostly procedures done were restoration of 313 permanent, 31 temporary teeth and endodontic treatments [5].

In Beijing Olympics 2008, 80 dentists performed 1600 procedures. As in previous games procedures done were several restorations, endodontic, a large no of cases of pericoronitis treatment, and mouth guard formations. When comparing the no of dental procedures performed in Beijing games with the 1968 Olympics held in Mexico, there was decrease in extractions from 320 to 47 cases. This highlights the philosophy and acting of a minimal invasive dentistry and more awareness of athletes towards their oral health [6,26].

Sports Dentistry in 2016 was considered one of the newest and upcoming fields in dentistry. This is also partly because of increase participation in sports by people due to more awareness about general health. Boxing was one of the first sports to be benefitted by the sports dentistry. April is celebrated as national facial protection month in USA.

Oral health is an integral part of general health and is considered a basic human right. It's a well known fact that active periodontal disease can disseminate bacteria through gums to active blood stream, which in turn activate host response; affecting performance of athletes [7].

Most athletes follow demanding training regime to achieve optimal performance for this they take dietary supplement, sports drinks, multivitamins, mineral preparations, carbohydrate sports bar, protein powder and meal replacement. The importance of disease free oral cavity is often overlooked and oral health may be compromised [8].

The separate studies shows that from 13% - 39% of all dental injuries were sports related and of all sports related accident reported 11% - 18% were maxillofacial injuries. Molars are twice

traumatised followed by maxillary lateral incisor as most injured teeth.

As per studies conducted athletes who possess psychological factors like high level of stress, high competitive trial anxiety, negative mood state, low social support are more prone to injuries. Competitive anxiety and tension/ mood status, anxiety were related to more frequent injuries [19].

Extend of the dental injuries may not be apparent immediately initially but benign appearing injuries could result in permanent deformity if not treated properly [9].

In recent years, a sport medicine has evolved into a more disciplinary field that recognises sports dentistry as an awakening element.

Dentofacial challenges for athletes

Childhood and adolescences age athletes are at high risks for Dento facial traumas. Children with CL2 Div 1 occlusion are more prone to Dento facial injuries comprising 8% of all traumatic injuries. First peak is when children start walking; second peak is when children start Sports activity. Further increased over jet leads to increase trauma incidence. Further, contact sports increase the chances of facial trauma.

Frequently seen dental problems are dental cervical erosion; caries, parafunctional load, bruxism, tongue injuries, TMJ problems, and lack of education of oral hygiene are main reasons of affecting athlete's performance significantly. Other conditions include:

- Tooth luxation- Tooth luxation injuries are more common in children as their bones are less dense.
- Tooth fracture- Tooth injuries can be simple from chipping, broken tooth to more serious fracture starting from crown to root of the tooth.
- Tongue injuries- These can be from simple cuts leads to bleeding to more serious lacerations needs critical care.
- TMJ- Fractures and dislocations may need splints to stabilize them.
- Caries- Sports and energy drinks are high in sugar contents which are highly cariogenic. Sports drinks/food supplements can disturb the normal oral environment due to high content of sugary and acidic ingredient which favours the caries.

- Dental erosions- Energy drink consumption is common among athletes even though they may be sugar free drinks but are highly acidic and cause dental erosions.
- Several reports show intensive Swimmers get dental erosion due to low ph chlorinated water. Low ph pool water results in general erosion. A case report has also been presented by W Geurtsen in 2000 which describes the very rapid occurrence of excessive general erosion of a compatible swimmer due to gas chlorinated pool water within 27 days [10].
- Xerostomia- Vigorous exercise and strenuous sports causes dehydration which reduces the salivary flow leading to xerostomia and also reduces the salivary protection against acid present in sports supplements and soft drinks consumed during sports activities [11,12].
- Barodontologia- In relation to water sports, divers can suffer Barodontologia considered an intraoral pain due to change in barometric pressure. Change in the volume of gas in improperly restored tooth, teeth with pulp involvement, vital pulp pathology and recent dental treatment can cause unbearable pain in divers and results in affecting their performance [13,22].
- Pre cancerous lesion- Tobacco use in sports is widespread and has been resistant to change over the years. Tobacco has been a part of culture in some sports and hidden in others. Athletes have false sense of performance enhancement without the knowledge of what is happening to their body. Research studies shows half of the smokeless tobacco users are more prone to precancerous mouth lesions in their mouth and they are 400 times on greater risk to get oral cancers than non users [14,15].
- Dento alveolar fractures- In contact sports there are very high chances for teeth and supporting bone fractures.
- Some athletes need to gain weight for that they take unbalanced diet which leads to dental problems which in turn affects their performance.
- Certain drugs widely prescribed in dentistry are transformed in the body into prohibited substances. For ex Codeine containing drugs are not prohibited by WADA but when they entered the body, metabolises into Morphine which is in prohibited drug list. So there is indirect potential effect of frequently prescribed medicines in dentistry.

Importance of mouth guard

Mouth guard is shock absorbing device inserted in mouth to prevent potential dental trauma and adjacent structure. These are essential piece of equipments for athlete. Athletes participating in sports without mouth guard are 60% more prone to Oro-facial injuries. Finding the right mouth guard is as important as having one. There are three kinds of mouth guards:

1. Standard- Typical one size fit to all.
2. Boil and bite- Over the counter product. Boil and bite to create more unique and secure fit.
3. Custom made- Costly but highly recommended protecting teeth, jaw, tongue, and mouth from injuries made by dentist.

In a study Stoke., *et al.* compared L type (pre-formed) and intraoral formed I type (custom made) mouth protectors. One type of protectors was worn for eight weeks and then changed to other type. Subject was not aware of type they had. Both protectors prevented the injuries but I type was more comfortable and well fitted [16]. Dental traumas can be minimised by using proper mouth guard as recommended by ADA in sports since 1950 [17,20].

The use of mouth guard is increasing and is becoming mandatory in some sports like Rugby, American football and ice hockey [18].

If an athlete is involved in multiple sports then he needs a new mouth guard for every sport. Mouth guard need to be changed frequently as they wear out with time.

Team dentist responsibility

- FDI Recommends team dentist should take Preventive measures for the maintenance of oral health of the team, educate them about importance of these protective measures and give them emergency treatment whenever needed.
- To advice and recommend what types of mouth protectors effectively reduce or minimise the incident of injury. Reinforce the importance of customised mouth guards/shock absorbing material and their use.
- Introduce the indication of customised face masks and shields made by dentists or under dental professional supervision.
- Update dental team on the metabolism of prescribed substances in potential conflict with WADA regulations.

- State the importance of an athlete's oral health status to their performances and the manifestation of oral lesions related to systemic reactions derived from sports conflicts.
- Fluoridate the teeth of intensive swimmers to reduce/control the dental erosion [2].
- Reinforce the importance of relationship between an athlete oral and general health.
- Promote the benefit of well balanced diet for good oral health.

Conclusion

Despite the use of face shields and mouth guard there is no guarantee of complete protection against Oro- facial trauma. However, risk is minimised because damage depends on magnitude and source of force beyond the anatomical region reached [9].

All organised sports team should have their own team dentist to ensure players best possible oral health/prevention of frequently disfiguring oral injuries which later leads to psychological distress. An early reorganisation of injury prone dentition and expertise in immediate management of dental injuries FDI aims to improve the oral health of athletes as well as systemic and psychological health increasing performance and safety in sports practice. The presence of dentists in high performance sports team is an impact measure to ensure athletes general health through oral and curative action.

Oral health assessment should be part of general health check up of every athlete and required dental treatment should be performed before the sporting event. Sport dentist plays an imperative role in creating and preventing smile of the athletes. Oral health awareness programs should be organised on regular basis for athletes.

Sports dentistry contributes healthier athletes and better performance.

Conflicts of Interest

None declared.

Source of Support

Nil.

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