Modern Sports Dentistry: A Review

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Abstract:

Modern sports dentistry is one of the newest & upcoming fields in dentistry. Many orofacial injuries occur during training, recreational, competitive combat sports & extreme sports at all levels, every day, all over the globe. Oro-facial traumas can have serious effects on athletes, children and their families causing discomfort, physical & psychological effects and also has financial repercussions. Additionally, indirect expenses associated with traumatic oral injuries can cause loss of time from school, training; from work for adult sportspersons, parents & repercussions that disproportionately affect athletes from lower income, minority groups, and families without insurance. Dental trauma can have cause substantial health-related issues, decrease efficiency in sporting activities and also on their daily life. Sports dentistry endevours to prevent, diagnose and treat such injuries, to reduce the consequences & to keep athlete's performance to the optimum. The mainstay of interventions in Sports Dentistry is prevention through awareness generation amongst children, parents, athletes, coaches etc., formulation of regulatory norms by national/state governments & sporting associations, promoting use of proper sports training technique, use of protective equipment like mouthguards and timely treatment depending upon the seriousness of injuries aimed at restoration of orofacial structure & their function to normal physiological levels.

Keywords: Combat Sports, Dental Injury, Awareness, Mouthguards, Regulations

Introduction:

In today's society, "SPORTS" are the most popular kind of recreation used by people to decompress. However, as a result of this, young children and teenagers are more likely to sustain contusions, broken teeth, and soft-tissue lacerations as well as muscle injuries.[(1)]

Common occurrence of injuries in Sports are traumatic oral and face injuries and these injuries are most commonly caused by falls, collisions with people or objects, and occasionally both, which can result in aesthetic, functional, psychological, and financial issues.[(2)] Athletes are not aware of the health effects of a mouth injury or the possibility of suffering serious head and oro-facial injuries while playing.[(3)] According to the American Academy of Sports Dentistry, it is the area of sports medicine that deals with the prevention and treatment of oral diseases and injuries related to exercise and sports-related activity.[(4)] In addition to encouraging research, sports dentistry (SD) entails the prevention, maintenance, and treatment of oral and facial injuries as well as the gathering and sharing of knowledge on dental trauma.[(5)] It is the dentist's responsibility to identify dental issues in athletes, such as mouth breathing and misaligned arches, and to appropriately give drugs free of any ingredients that can contribute to positive doping, which is present in many painkillers.[(6)]

History: The history of SD in Brazil coincides with the occurrence of some of the great sporting events, and it dates back to the 1958 World Cup of Soccer when Mario Trigo, a dentist, accompanied the Brazilian soccer team during this competition and subsequently in the 1962 and 1966 Cups.[(7)] Few dental professionals worked in the sports field up until the 1990s. Only 10 of the 42 Brazilian soccer teams have dental services at their main offices between 1992 and 1996. Most professional football organisations lacked dentists who would collaborate with the coaching staff, use outsourced services, and targeting curative care over preventive measures. Aldo Forli Scocate provided 265 assistances as the dentist in 1992 who was in charge of the oral health of Olympic competitors. As a result of the treatment provided at the Olympics, athlete's psychological conditions and their muscle performance improved.[(8)] Dental care was the second-most searched service at the 2004 Olympics Athens, behind only physiotherapy. There were 28 dentists treating 658 patients at the dental clinic, which was located in the Olympic Village's medical care section. Restorations and endodontic therapy were the most frequently performed procedures.[(9)] Boston- USA, hosted the first World Congress of Sports Dentistry and Dental Traumatology in June 2001.This meeting summarized the relationship between two international organization for Sports Dentistry (SDA): The. International Association of Dental Traumatology (IADT)

and International Academy decided to publish the official journal Dental Traumatology. The Brazilian Dental Association (BDO) as a response to the bill PL 5391/2005, which specifies how the presence of a standard dentist who specialises in SD during a competition is important, for broader integration of dentists in sport.[10]

Need of Sport Dentistry: The risk of dental and oral injuries increases for anyone who play these contact sports, including kids, teenagers, adults, professionals, and amateurs. Sports-related incidents account for up to 19% of head and face injuries and 33% of dental injuries.[11] The face is both the most defenceless and typically the least protected part of the body. Between 11 and 40 per cent of all sports injuries involve the face. Clash with a ball or object, or player-to-player are the most frequent causes of these injuries.[12] Team sports and combat sports have a 10% increased risk of oro-facial injury and a 33-56% increased risk of facial injury over the course of their career.

Dentistry is important in the world of sports because it can prevent, protect & help players achieve optimal oral health conditions, which greatly improves their entire performance.[6]

Discussion:

A. Combat Sports: Contact sports are those sports in which participants physically interact with one another. A blow or kick from another player most frequently results in damage to one tooth, while a fall or blow from a hard object frequently causes damage to two teeth. Damage can result in facial bone fracture, neck or brain injury resulting from increased cranial pressure and deformation, in addition to damage caused by traumatic impact to the dentoalveolar structure. A blow to mandible in sports is the most common cause of concussion. Although the incidence of dental trauma in contact team sports is rarely high.[13]

B. Types of Combat sports: Field events, Football/soccer, Hockey, Ice hockey, Gymnastics, Handball, Inline skating, Lacrosse, Shot putting, Martial arts, Rugby, , Skateboarding, Skiing, Skydiving, Surfing, Volleyball, Water polo, Squash, Weightlifting, Wrestling, Extreme sports, Equestrian events, and Wrestling.[14]

C. Types of Injuries in Sports: The common oro-facial sports injuries are soft tissue injuries and hard tissue injuries those to the teeth and facial bones, like tooth intrusions, luxation, complete avulsions, crown and/or root fractures and dento-facial fractures.[15]

a. Tooth intrusion: The most severe type of displacement damage, which drives the tooth into the alveolar process and results in pulp necrosis in 96% of cases, is caused by an axially directed impact on the tooth. The tooth becomes immovable and produces a metallic sound on percussion.[16,17]

b. Tooth Extrusion: The trauma partially displaced the tooth out of its socket. Usually, it is displaced palatally. The tooth appears displaced and empty socket is seen on radiographs.

c. Crown and Root Fractures: are the most common injury to the permanent teeth and can manifest in various ways. Crown infraction is the most basic form. This is a crazing of enamel without loss of tooth structure. It requires no treatment except for adequate testing of pulpal vitality. Dentin-extending fractures are become extremely sensitive to temperature and other stimuli. The most severe crown fracture causes the pulp to be completely exposed and contaminated. A horizontal impact can also cause a root fracture. Mobility is the main clinical sign of a fractured root.[18]

d. Tooth Avulsion: Of all the dental injuries, avulsion of permanent teeth accounts for 0.5%-16% of cases. The damage results in the knocking out or full removal of the tooth from the socket.[19]

e. The mandible: When the impact is delivered to the inferior aspect of the mandible, it accelerates the head rotationally, while the force on the anterior aspect of the mandible accelerates the head linearly.[20]

f. Fracture: Maxilla is the most frequent site of fracture in most situations. However, the mandible may also fracture in 10% of cases. Condyle is the area of the mandible that is most susceptible to injury in both children and adults. According to current research, condylar fracture in children has the potential to alter the growth of the lower jaw. The delicate tissue wounds and "T-zone" bone cracks are the most well-known types of sports-related facial damage (nose, zygoma and mandible).

g. Temporomandibular joint injury: Although every blow to the mandible does not result in fracture. The condyle moves posteriorly as a result of this force transmitted to the temporomandibular disc and its supporting structure, compressing the retro-discal tissue, and leading to intracapsular haemorrhage and subsequent ankylosis of the joint.[17]

D. Risk Factors for Sports Injuries: There are two main groups of sports injury risk factors. These include both intrinsic and extrinsic risk factors.[21]

a. Extrinsic factors: Extrinsic risk factors are those possible injury predictors that do not depend on the person. These are essentially the injury predictors that are connected to the kind of activity that a specific sport requires. For example, engaging in stress-producing activities like running or jogging is more likely to result in a stress injury than that playing contact sports like American football or boxing.[22] Training errors can also be substantial extrinsic risk factors for sports injuries when used improperly as a means of

competitive preparation. Other extrinsic elements include the quality of the playing field, the state of the gear to be used or worn, the weather, such as ice or rain, and the standard of participant supervision.[23]

b. Intrinsic factors: The predisposing qualities that each sports participant possesses are known as intrinsic risk factors. A recent review of intrinsic risk factors related to athletic injuries has been presented by Taimela et al.These authors provide convincing evidence that intrinsic factors play a significant role in the evolution of some sports injuries. These biologic and psycho-social characteristics may predispose a person to a particular type of sports injury. They draw the conclusion that numerous potential inherent risk factors have not gotten enough attention and that additional research is necessary to confirm their overall importance for sports medicine and dentistry.[24]

I. Age: The complex world of intrinsic risks includes significant contributing aspects like growth and development, physical maturity, body strength, coordination, and healing capacity. Robey and co. In two different research, Robey JM et.al.[25] and Blyth and Mueller[26] came to the conclusion that the risk of injury in high school football increases with age. According to a different study, teens and young adults sustained the majority of sports injuries, and as people aged, their likelihood of suffering an injury dropped. It should be emphasised that trauma to the primary dentition in young children most frequently results in luxation injuries prior to the emergence of the permanent incisors. In marked contrast, crown fractures are more common in the young permanent dentition. This phenomenon appears to be influenced by a smaller crown to root ratio together with denser and more mineralized alveolar bone.[27,28]

ii. Gender: It's possible that men and boys have a tendency to choose more violent, aggressive, or "contact" sports, which could explain the involvement of gender as a potential risk factor for sports-related traumatic injuries. According to Stephens et al.[29] men and boys are more likely than women and girls to engage in both intense exercise and competitive sports.

iii. Injury history: Blyth and Mueller conducted a number of studies that examined the association between prior injuries and the chance of **r**ecurrence was evaluated. They came to the conclusion that prior injuries, when appropriately and completely treated, do not often predict a repeat injury. However, they also pointed out that some people with biological traits that make them more prone to injuries, such as youngsters with muscle imbalance, cerebral palsy, or epilepsy, may continue to be at higher risk for a particular injury.[30]

iv. Body mass: Sports participants with larger bodies may have a higher risk of injury due to a variety of variables. These include a higher centre of gravity, increased leverage brought on by longer and/or stronger limbs, and joint stress from added weight. A number studies have shown that athletes who are too tall or heavy are more likely to get hurt.

v. The central nervous system: According to a review of the research, beginners in various sports have a higher risk of injury than veteran athletes. The dentist should be aware of this knowledge when discussing sports injuries with young patients and their parents. Physically challenged people with central motor impairments are more likely to sustain injuries during physical activities like sports than physically fit populations without impairments in coordination. Clinicians and researchers in sports medicine and dentistry face a new set of issues as the field of sports for developmentally impaired people.[31]

vi. Psychological and psychosocial factors: According to Kerr and Fowler, any psychological factor, such as stress, anxiety disorders, lack of confidence, or pressure to perform well, would cause a participant to become less focused on the challenges of their sport and/or make them more likely to become fatigued, which may be a contributing factor to sports injuries. In this area, additional study is recommended.[32]

vii. General cognitive capacity: Studies showed a link between sports-related injuries and lower cognitive test results, indicating that injury proneness may be predicted by IQ. Since injury proneness appears to cross intellectual boundaries, this relationship needs to be clarified.[33]

viii. Other elements: Other variables such as body type, physiologic age, dietary condition, metabolic differences, and a variety of hereditary factors may also influence the risk for sports injuries. Although several of these predictions are extremely suggestive, this group of indicators is still rather poorly described. For instance, experimental evidence supports the existence of individual variations in connective tissue regeneration after injury.[34]

E. Effect of Injuries: The aftermath of these injuries can be tooth loss, root resorption and/or ankylosis occurs in cases that have been treated. The patient may then continually go through procedures like implant, prosthesis use, repair and root treatment.[35,36] Oro-facial traumas can have serious effects on children and their families in terms of possible discomfort, psychological affects, and has financial repercussions. Children who have untreated permanent teeth trauma show larger effects on their daily lives compared to those without any traumatic injury. For restorative, endodontic, prosthodontics, implant, or surgical treatments arising from dento-alveolar damage, a patient may incur

significant costs over the course of their lifetime. Additional indirect expenses associated with traumatic oral injuries include time lost from school for children and hours lost from work for parents and children, repercussions that disproportionately affect children from lower income, minority groups, and families without insurance.[37] Dental trauma can have substantial effects on a variety of health-related issues, which can then affect daily life.[38] Those who suffer total tooth avulsions and do not have their teeth properly preserved or replanted may incur lifetime dental costs of US$10,000 to US$15,000 per tooth, spend a lot of time in the dental chair, and develop additional dental issues like periodontal disease.[39]

F. Mechanism of Dental Injuries:

Contact sports have inherent risks that raise the risk of sport related dental injuries in young athletes. Sports-related oral trauma can occur form a variety of reasons, including poor training techniques, a lack of focus, the use of incorrect equipment, insufficient warm-up and stretching, and a lack of conditioning. Improper coaching might make an athlete more susceptible to injury. For an athlete to respond in game situations and reduce injury risk, proper instructions and supervision in physical fitness and inherent athletic talents are required. According to reports, coaches have a greater impact on athletes than parents, other athletes, or officials.[40] Traumatic impacts provoke an acute release of energy onto both soft and hard tissues, causing tissue laceration, contusion, and ablation.[41]

Assessment of facial injuries as part of treatment:

When evaluating the facial injuries, the principles of trauma evaluation should be followed and should begin with breathing, airway, circulation, and disability. Vital sign examination and assessments of mental state are also important components of the initial evaluation. Following the first evaluation and stabilisation, a systematic facial examination is carried out, paying close attention to significant bony landmarks, neurovascular structures, and soft tissues. The initial survey is the first and most important step in evaluating individuals with trauma. Resuscitation is started at the same time as any injuries that are life-threatening are found.

A simple mnemonic, ABCDE, for the sequence in which problems should be addressed. (A- Airway, B- breathing, C- circulation, D- disabilities and E – exposed environment control), should be used. The secondary survey can start once the main survey is finished, resuscitation procedures are firmly established, and the vital signs are returning to normal. The secondary survey involves a thorough evaluation of the trauma patient from head to toe, including a thorough physical examination and rechecking of all vital signs. Each body area must be thoroughly checked before getting the radiographs that the examination indicates. Another primary survey is done, if there can be a possible threat to life if the patient starts to worsen at any point during the secondary survey. Any soft tissue injuries and noticeable asymmetries of the facial shape (which may indicate underlying bone fractures) are documented once the potentially fatal injuries have been ruled out. The face is examined in great depth starting at the scalp and working down is a frequent strategy.[42]

Treatment:

A. Treatment for tooth avulsion:

The most complicated dental injury associated with sports is tooth avulsion, which needs to be treated as a real emergency. It would be simpler to manage if the fundamental guidelines were printed on a pamphlet and given to every school and sports club.[43]

a. Splinting: Splinting stabilizes the avulsed tooth and promotes pulpal and periodontal healing. Semi-regular flexible splinting is advised for physiologic tooth mobility.[44, 45] Dental trauma splints must be passive and must not harm the gingival tissue or compromise dental hygiene.[46] There are many different types of splints available, including bracket splints, titanium wire splints, trauma splints made of titanium, multi-stranded flexible orthodontic wire, and composite splints.[47]

b. Storage Media:

An optimal storage medium should have the right PH and osmolality. It should be inexpensive, simple to use, and capable of preserving the health of the pulp and Periodontal ligament (PDL) cells.

I. Hank's Salt Balanced Solution: It is a salt solution with a balanced PH that contains all the key metabolites and glucose needed for cell maintenance. An avulsed tooth can be kept alive for at least 24 hours.

ii. Eagle's medium: Although it is a superior storage medium, its widespread usage cannot be advised due to its limited availability.

iii. Milk: Due to its readily availability, it is the most useful storage medium for the short-term transport of an avulsed tooth.

iv. Viaspan: The PDL cell morphology stays the same in Viaspan, which outperforms Hank's Balanced Salt Solution over the long run.

A few more storage options for avulsed teeth are Gatorade, custodial, Dubelco's storage media, propolis, tooth rescue boxes, conditioned media, contact lens solutions, saliva,

normal saline, saliva extract, coconut water, castor oil, red mulberry, Euro-Collins, Ricetral, and egg white.[48,49]

B. Treatment of tooth intrusion: 96% of intrusive displacements result in pulpal necrosis, which is more common in teeth with fully developed roots. The development of mature roots necessitates repositioning, surgery, splinting, or orthodontic extrusion. Since the pulp usually becomes necrotic, it should be treated quickly with temporary filling of calcium hydroxide paste followed by root canal therapy.

C. Treatment of tooth Extrusion: Treatment of extrusion of tooth is trying to reposition gently, local anaesthetic is usually not required. The occlusion should be checked to be sure there is no pressure on the tooth and use a non-rigid splint for two weeks. The vitality of the pulp should be checked periodically by the dentist and if necessary, root canal therapy should be done.

D. Crown and Root Fractures: Crown infraction is the simplest form of fracture. This is enamel crazing without loss of tooth structure. It requires no therapy except for adequate testing of pulpal vitality.[50]) Fractures extending into the dentin are usually very sensitive. In the most severe crown fracture the pulp is fully exposed and contaminated. This may result from a closed apex tooth or a horizontal impact may result in a root fracture. The main sign of root fracture is mobility. Radiographic evaluation and examination of the adjacent teeth are required to determine the possibility of associated alveolar fracture, location and severity of the fracture.[51]

E. Effective emergency intervention:

The management of sports dental Injuries depending on how soon after oral trauma occurs are categorised into three different strategies to address traumatic dental injuries:

a. Emergency (Within 5 min): In an emergency, injuries should be treated quickly—ideally, within 5 minutes. Patients, who are bleeding, in pain, need to be attended immediately. Any bleeding should be managed, and blood should be cleansed from the face and lips, after a brief medical history that includes information on tetanus vaccination. Quick intervention, encouraging assurance, effective anaesthesia, cleaning and debridement of soft tissues, and bleeding management all significantly help to reduce anxiety and facilitate assessment procedures. Clean soft tissues with water or a mild detergent. Positive pressure may typically stop bleeding from lacerations. Repositioning the tissues and holding them in place for a few minutes will help stop gingival tissue bleeding.

Treatment is needed right away for avulsion, lateral, and extrusive luxation as well as for alveolar fractures and displaced root fractures. Avulsed Adult teeth should be reimplanted right away (preferably within five minutes). Everyone working in the emergency department should be able to do this. All other fracture and displacement injuries can be handled by the general dentist or the oral and maxillofacial surgery team on a delayed basis. Due to the inhalation risk of displaced teeth, its management should be prioritised.[52]

b. Urgent (Before 60 min): Avulsions should be handled urgently, ideally within 60 minutes, if they are not immediately re-implanted. Root fractures with an extruded coronal fragment and extrusive luxations are examples of displacement injuries that should be treated urgently.[53]

c. Delayed (After 60 min): Emergency situations do not include simple crown fractures, tooth concussions, or subluxations. Ideally, all exposed dentine should be rapidly covered. Complicated tooth fractures (crown fractures involving the pulp) should be treated within 24 hours.Soft tissue injuries also need to be given priority consideration.[52]

Prevention:

Sport dentistry focuses on the prevention and treatment of oral illnesses and tooth injuries that are caused by physical activity or sports.Due to its significant occurrence and the effects it has on those who are affected, dental trauma is regarded as a public health issue. Most oro-facial injuries sustained while participating in sports can be avoided. The use of a mouth guard can lessen this danger. Mouth guards equally distribute the force of a hit throughout the mouth, reducing the likelihood of injury.[54]

A. Awareness Generation: It is important to raise awareness about how individuals participating in sporting activities are at risk of dental trauma, in athletes, coaches, sports managers, trainers, parents and dental professionals. Dental professionals, as health care providers, can play a vital role in educating coaches about sports-related dental injuries at the professional or junior levels.

The rates of oral trauma associated with sports injuries and the influence of other factors on sports injuries appear to be significantly lower when there is increased education. Education about how to avoid oral and dental injuries and what to do immediately if an injury occurs, is the best strategy to prevent them. After education, wearing simple protective equipment like properly fitted helmets, facemasks, and mouth-guards is undoubtedly crucial for preventing sports-related oro-facial injuries.[55] Parents should be made aware of the dangers of oral injuries, their effects, and the benefits of using mouth guards that are appropriate for children.[54]

B. Preventive Dental Procedures: The primary objective of many sports is to decrease the frequency and severity of tooth

injuries sustained during participation. Children with excessive overjet (more than 6 millimetres) and insufficient lip coverage are far more likely to experience dental trauma. These risk factors might be modified by a dental professional. Preventive orthodontic therapy can potentially lessen the severity of severe damage to permanent incisors in children with early- to middle-mixed dentition and overjets greater than three millimetres.[37]

C. Protective equipment: It has been demonstrated that dental and facial injuries can be reduced significantly by mandatory use of protective equipment. The country's sporting organisations are not very proactive in providing information about the risks of sports or the methods needed to avoid them. To prevent oral trauma, concussions, head and neck injuries and jaw fractures, the coaches should urge that the athlete use protective equipment at all times.[56]

Thus, by using protective equipment like mouth guards, faceguards, and helmets properly, one can achieve the goal of prevention by lowering the possibility of injury to the teeth as well as the nearby structures.[57]

a. Mouth-guard: is universal and generic, including a wide range and variety of goods, from over-the-counter models purchased at sporting goods stores to professionally manufactured and dentist-recommended custom mouth-guards.

The following are the most popular mouth guard options for athletes:

Type I: Stock mouth-guards, which can be purchased over-the-counter and are made to be used without additional modification. These mouth-guards are no longer widely available.

Type II: Mouth formed boil-and-bite mouth- guards. They are made from a thermoplastic material that is immersed in hot water and then formed in the mouth by the athlete using finger, tongue, and biting pressure.

Type III: Custom-made mouth-guard: they are specially created on a model of the patient's mouth.

The custom made mouth-guards are superior in comfort, protection, and retention. Various materials can be used to manufacture custom made mouth-guards, but ethylene-vinyl acetate is by far the most popular option, presumably because the superior properties of the material and fabrication process are relatively less.

It is evident from the research that mouth-guards are seen as providing significant protection against dental injuries caused by sports. It is also evident that even though it is believed that custom made mouth guards provide better protection than "boil-and-bite" types. Having known the clear ability of mouthguards to prevent orofacial injury, it is surprising to find that the use by athletes has been poor. It is seen that there is a tendency for the general public to dismiss health and safety messages by the in spite of overwhelming evidence about the protective effects of mouthguards, as individuals tend to believe the risks apply only to others. Many individuals do not use them because they believe they are pricey and require a visit to the dentist. Peer pressure plays an important role in team sport behaviour. For example, people may not wear mouthguards even if they are convinced about the protective effect & benefits, if their team mates do not believe in the same or there is a 'code of conduct' of not wearing a mouthguard in the team.[58]

b. Faceguard: This prefabricated metal or composite cage, which is fastened to a helmet or a head strap and offers good protection for the face and teeth.[41] A recent study found that using full-face shields is related to a slightly lower incidence of facial and dental injuries without an increase in the risk of neck injuries, concussions, or other injuries.[59]

c. Helmet: The outer layer of modern helmets is typically constructed of polycarbonate or other premium polymers, which encourage optimal stress and force distribution and lessen impact energy. The proper helmet use can protect snowboarders from head injuries when they are exposed to falls or accidents. Research shows that 52.9% of riders who suffered oral, nasal, or facial injuries were not wearing helmets.[60]

D. Regulatory Actions: All preventive and curative procedures for oro-facial athletic injuries are governed by sports dentistry. The country's sporting organisations are not very aggressive in providing information about the dangers of sports or the methods needed to avoid them.6

Game regulations, or the ability or willingness of officials to enforce them, should be taken into account when assessing the risk of sports-related trauma. Club officials plan campaigns about oro-facial injuries and prevention measures.[40]

The American Academy of Pediatric Dentistry (AAPD) intends to educate dental professionals, healthcare providers and educational and athletic personnel about how to prevent sports-related oro-facial injuries. Despite the extremely infrequent use of mouth guards in sports, the International Academy of Sports Dentistry and American Dental Associations presently recommend the use of mouth-guards in 29 sports. Mouth-guard usage is influenced by officials', coaches', parents', and players' attitudes toward wearing them. Dentists should actively engage in teaching the public about the proper use of protective gear to avoid oro-facial injuries while participating in sports and other leisure activities. In the United States, it recommends the following guidelines to minimise sports dental trauma:

- Young athletes engaging in baseball and softball activities must wear a face shield that has received ASTM certification.
- Mandating the use of mouth guards that are correctly fitted in other competitive sports where there is a chance of oro-facial injury.
- Before beginning practises for a sporting season, coaches and administrators of organised sports should consult with a dentist with experience in oro-facial injuries to get recommendations for the quick treatment of sports-related injuries (e.g., avulsed teeth)
- The continued development of a comfortable, effective, and affordable sports mouth guard to enable wider adoption of this essential safety measure.
- As part of the anticipatory guidance discussed during dental visits, dentists from all disciplines, including paediatric and general dentists, should educate parents and patients about how to prevent oro facial injuries.
- For individuals at higher risk for oro facial trauma, dentists can recommend, construct, or prescribe mouth guard protection.
- Pediatric dentists should collaborate with other dentists, child health specialists, school officials, lawmakers, and local sports organisations to encourage mouth guard use.
- Pediatric dental department to instruct dental students in the creation of mouth guards that are perfectly sized.[37]

Summary

It is clear from this review that there is a substantial risk of dental injury connected with participating in a variety of sports, including less obviously dangerous ones like basketball as well as the so-called contact sports like rugby and hockey.

Although it is still in its infancy, sports dentistry is a field that is expanding quickly. Every practising dentist, whether they are a general dentist, a specialist, an academic, or a researcher, has a responsibility to get involved. Sports dentistry will undoubtedly be important of our future.[(8)] The dentist can play a crucial role in educating patients, coaches, and players about the importance of dental sciences in preventing oro facial injuries in sports. The key is education of all concerned parties is essential. The team doctors, dentists, athletic trainers, and coaches must take into account both the sport and the athlete's prior medical history. Our attention must be directed toward improving mouth guard quality for player safety in an effort to reduce the prevalence of concussion in athletes.[61] There is a paradigm shift in the epidemiology of oro facial injuries due to modifications in equipment and legislation.It is important to raise awareness for the use of oro facial protective devices in a variety of sporting events by getting in touch with coaches, sports officials, and athletes as well as familiarizing Indian dentists in a relatively new profession.[(62)] Mouth guards should be worn at all times while participating in sports, and sports regulating bodies and major games organising committees should work with dental hospitals and colleges to play a more active role in promoting programmes to avoid oral disease and injury. They should also provide more information regarding the management of avulsed teeth.[(38)]

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