

Common Dental Injuries In Athletes – A Review:

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ABSTRACT:

The most common form of orofacial injury experienced during participation in sports is dental injuries. Oral injuries can cause the victim to become disfigured after recovery, which can affect the athlete's quality of life. The health consequences of a traumatic mouth injury or the potential for severe head and orofacial injuries while playing are not known to many athletes. The dentist may play an important role in sharing the importance of preventing dental and facial injuries in sports with athletes. This article aims to increase professional understanding and interest in training in sports dentistry.

KEYWORDS: Athletes, Injuries, Sports, Dentis

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INTRODUCTION:

With the increased popularity of contact sports and motivation to participate at an early age, dental injuries are the most common form of orofacial injury incurred during participation in sports; the role of the dental profession in preventing dental and other orofacial sporting injuries has become more significant¹. Constrained knowledge of the timely triage of traumatic dental injuries may have a lasting impact on athletes². More and more individuals are now active in a wide range of sports and physical activities³. The number of dental or orofacial injuries is growing with the increasing interest in sports activity³. This type of injury not only affect the athlete's professional career, but also affects his or her personal life³. Dental and orofacial injuries are of special concern because they do not heal, unlike lacerations or fractures, and therefore require permanent artificial or prosthodontic replacement (filling, crown, implant or denture)⁴. During sports events, players, coaches, athletic directors, athletic trainers, parents, and members of the dental community should be mindful of the risks of dental trauma¹. The outcomes of different types of sports activities such as soccer, skiing, basketball, cycling, hockey, snowboarding, boxing and other contact fighting sports are very common and it include maxillofacial injuries and temporomandibular disorders⁵. It is estimated that contact sports are responsible for about 19% of maxillofacial injuries and 33% of dental injuries⁵. Due to repeated and direct traumas to the head and face region, boxing-related injuries are deemed more severe than other sports⁵.

INCIDENCE AND EPIDEMIOLOGY:

It is estimated that 30-40% of pre-school children have injuries to their primary teeth². Children aged 7 to 11 years are most vulnerable to sports-related oral injuries, according to the American Academy of Pediatric Dentistry². In males (12% to 33%), dental damage to permanent teeth is two to three times as probable as in females (4% to 11%)². A New Zealand research conducted by Loye et al (1998) found that basketball was the third largest contributor to dental injuries in the TOP 10 sports³. A spectrum from 16.6 percent to 80.6 percent has been identified with regard to the prevalence of orofacial trauma in basketball³.

There are a variety of popular dental injury figures that run through most sports. These numbers are as follows⁴:

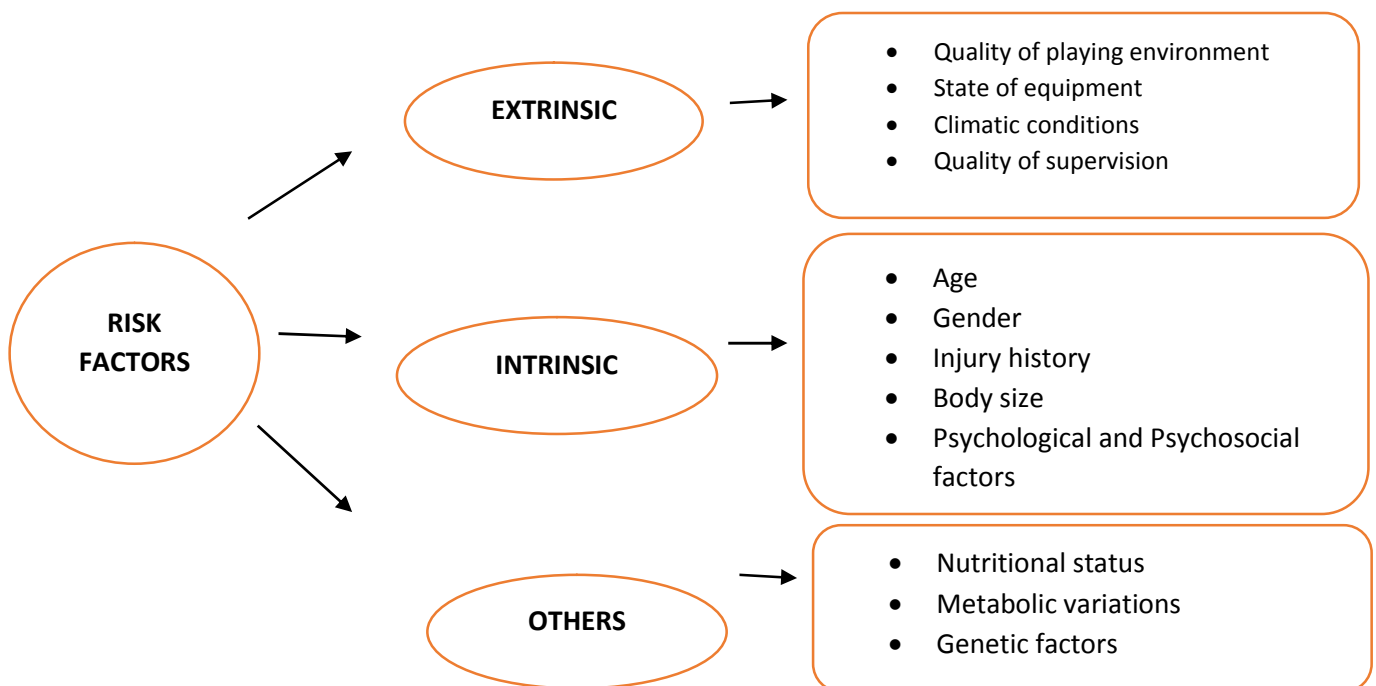
- In men, nearly twice as many injuries occur as in women⁴.
- A single tooth is part of most dental injuries⁴.
- The 4 maxillary incisor teeth cause 80% of all dental injuries⁴.

- Injuries to the teeth on the left hand are marginally greater⁴.
- There is a high rate of repeated incidents⁴.

The most common diagnosis was fracture, according to a study investigating the epidemiology of boxing injuries in the United States over a 19-year study period by Potter et al (27.5%)⁵. The hand (33.0 %), followed by the head and neck, was the most commonly injured body area (22.5%)⁵. In this area, lacerations include the face, mouth and eyes (87%). All orofacial injuries included soft tissue injuries (50%), dental injuries (40%), jaw fractures and temporomandibular joint injuries (10%), as recorded by Jerolimov⁵. The occurrence of sports-related orofacial injuries depends on the nation's circumstances in terms of the number of people involved, the extent of the sports facilities, and the most common sport:

- The National Youth Sports Foundation for the Prevention of Physical Injuries, Inc. reports that players have a 10% risk of having a facial or mouth injury during the playing season⁶.
- Studies found that 13%- 39% of all dental injuries were linked to sports and 11% -18% percent of all sports incidents recorded were maxillofacial injuries⁶.
- Soft tissue injuries and fractures of the "T zone" bones are the most common forms of facial trauma related to sports (the nose, the zygoma and the mandible). In combination, these accidents also occur⁶.

RISK FACTORS FOR SPORTS INJURIES:



SPORTS – RELATED INJURIES:

1. FRACTURES:

Facial bone fractures create a more complicated issue. The zygoma is the most common site of bony injury (cheekbone)¹. Approximately 10% of the maxillofacial fractures seen in sports accidents, arising from direct blunt trauma from a fall, elbow, or fist, account for zygoma fractures¹. Crown fractures (79%) are the most common form of dental fracture. Enamel alone, enamel and dentin, or enamel, dentin, and pulp can be included in the crown fracture². With a violation, the enamel can appear intact, but cracks can be seen with an axially guided light source². A dentist would not need to be seen in an emergency, but for potential smoothing and contouring, the athlete can see the dentist within 24 hours². When the dentin is exposed to sunlight, cold drinks, or touch, the enamel with dentin damage manifests with painful sensations². If there is a loose tooth fragment, if the fragment cannot be reattached with bonding agents or composite resin materials on site, it should be placed in cool milk or Hank's balanced saline solution².

The pulp damage is significant and needs immediate dental referral. Pulp damage, which is a dental emergency, shows a bleeding spot or red mark with increased pain sensitivity². If there is no discomfort or if the opening of the pulp is dry or oozes putrescent exudates, the injury may not be an emergency; but a dentist should see the athlete as soon as possible because there may be some cause of dental disease². When athletes present with crown segment mobility and percussion tenderness, root fractures are suspected². Root fractures require radiographs and may be apical, middle, or cervical for verification². There is a better prognosis for apical root fractures and they usually go undetected. Depending about how easily care is started, middle root fractures have a strong prognosis². The prognosis of cervical root fractures is not as good². Segmental fractures and Le Fort I are the two most common maxillary fractures in sport⁴. Apart from segmental fractures that can be treated in most cases in a similar way to maxillary fractures, body, ramus, and condylar fractures are the 3 most common mandibular fractures⁴.

TEMPOROMANDIBULAR INJURIES:

Most hits to the mandible may not lead to fractures, but it is possible to transfer excessive force to the temporomandibular disc and supporting tissues that can result in permanent injury. In both moderate and severe trauma, to the degree that the retrodiscal tissues are squeezed, the condyle may be pushed posteriorly¹. Inflammation and edema in acute malocclusion results in pulling the mandibular condyle forward and down¹. The surrounding musculature, articular and extraarticular ligaments, articular disc, and teeth will absorb the traumatic effect of the force⁵. In direct and indirect paths, there are two basic mechanisms of boxing wounds and associated TMJ disorders such as microtraumas and macrotraumas⁵. Chronic microtrauma to the temporomandibular joint may lead to synovitis, capsulitis, tendinitis, disc displacement reduction and non-reduction, osteoarthritis, subluxation and condylar dislocation, periodontal and teeth dislocation⁵. Restricted mandibular range of motion, deviation of the mandible from the affected side, joint sounds and pain, commonly associated with painful sensation of muscle tissue, are clinical signs of internal derangements⁵. Macro-traumas are external variables, such as acute blows of high severity. Maxillo-mandibular and condylar fractures, condylar dislocations, dental traumas, fibrous or bony ankylosis, cranial base fractures and concussions are likely to result in these traumas⁵.

TOOTH INTRUSION:

Tooth intrusion occurs when, because of an axially guided effect, the tooth has been pushed into the alveolar process¹. This is the most significant type of injury due to displacement. In 96% of invasive displacements, pulpal necrosis occurs and is more likely to occur in teeth with completely formed roots¹.

TOOTH EXTRUSION:

The tooth is partly moved by the trauma out of the socket. It is normally displaced by the palate. Radiographically, at the end of the socket, the tooth appears dislocated and empty¹.

CONCUSSION:

Concussion to the tooth is an injury to tissues that support percussion tenderness due to inflammation but no mobility². This is considered a mild injury, and recovery typically includes nonsteroidal anti-inflammatory drug (NSAID) pain relief, soft diet, and referral to a dentist².

SUBLUXATION:

Subluxation leads to mobility without any clinical or radiographic evidence of dislocation². It can weaken and inflame the periodontal ligaments, causing gingival bleeding². Treatment consists of NSAID pain relief, soft food, and dentist referral².

LATERAL LUXATION:

Lateral luxation occurs when the tooth, with probable concomitant alveolar bone fracture, is displaced laterally². Usually, this is a more severe injury because once the apex has been dislodged, it is impossible to reposition it². For primary teeth, spontaneous repositioning can occur if the displacement does not interfere with the bite; but athletes should always see a dentist².

AVULSION:

An avulsed tooth is entirely shifted from the socket and is the most extreme of all dental injuries². For the best prognosis, the tooth should be reimplanted within 15 to 20 min². If the tooth is left outside the mouth for more than 30 minutes, there is a worse prognosis². If the tooth becomes too dry, ankylosis and root resorption may occur². The permanent teeth should be reimplanted immediately and only the crown and enamel should be treated carefully². If the tooth cannot be re-implanted in the region, the tooth should be put in a suitable solution, like Hank's Save-A-Tooth solution, cool milk, saliva, and physiological saline. Milk is a good substitute for the preservation of periodontal ligament vitality and has essential calcium and magnesium ion concentrations². Primary avulsed teeth should not be re-implanted since the permanent tooth follicle may be injured by this².

ABSCESS:

Pulp disease extension, inflammation, or necrosis may affect the soft tissue, root, and apex of the teeth surrounding it, resulting in an abscess². Athletes may have discomfort in the affected areas of percussion and gingiva swelling with potential draining fistulas². The abscess may be localised, but there may also be cellulitis². Usually indicated is the definitive repair or removal of the infected tooth, which is the primary cause of infection².

PERIODONTAL PROBLEMS:

Swelling, bluish-purple gingiva discoloration, and suspected gingival bleeding after eating or brushing are the initial symptoms. Inflammatory disruption of the periodontal ligament may lead to removal of the tooth from the bone as gingivitis progresses².

LACERATIONS:

Lip lacerations are also associated with tooth fractures. Wide lacerations are prone to ulceration, secondary infection and fibrotic healing and can be classified as greater than 1 cm². In any case where the intraoral mucosa or tongue is lacerated, to restore proper anatomy, minimise healing time and avoid infection, it is proper practise to close these lacerations⁴.

GINGIVAL TRAUMA:

It is common for the gingival tissues to be stripped back causing a degloving injury⁴.

DENTAL EROSION:

Enamel degradation can result in many negative outcomes, including exposure to pulp, infection, abscess, broken or missing teeth, and decreased function⁴. Acid reflux (including those associated with eating disorders), high consumption of citrus fruits or beverages, and sports drinks are the primary causes of erosion⁴. In athletes at all levels, sport-beverage intake is increasing and is currently promoted by coaches and nutritionists despite the fact that these beverages have been clearly shown to be in vivo erosive⁴.

PREVENTION:

In certain sports, the promotion and use of helmets, face masks, and mouthguards, etc., is required to minimise both the risk and seriousness of sports-related traumatic injuries to an athlete's head, face, and mouth¹.

By providing resilient, protective surfaces that disperse and dissipate transmitted forces, mouth guards can decrease the risk of oral wounds during sports. They also decrease soft tissue lacerations and avoid opposing arches from traumatic contact due to mouth guards separating the cheeks and lips from the teeth².

The skin and bones can also be covered by helmets and face masks when worn properly². Face masks and helmets have been shown to decrease football traumatic injuries; however, there are no orofacial protectors or mandatory mouth guards for less risky sports and non-contact sports, which can increase orofacial injuries in these sports².

When dentists may recognise those who are at greater risk of dental injury, athletes should have daily dental check-ups².

CONCLUSION:

Dental and oral injuries in athletes may be serious and lead to irreversible complications. As a health care professional, it is the dentist's duty to become and stay trained and pass on this education to the community on topics relating to sports dentistry and especially the prevention of sports-related oral and maxillofacial injuries. Wear mask and play safe.

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