

Playing safe

Mouthguards for contact sports

American football	Football	Judo	Roller skating
Bike riding	Hockey	Kick boxing	Rounders
Boxing	Horse riding	Lacrosse	Rugby
Cricket	Ice hockey	Martial arts	Skateboarding
Cycling	Ice skating	Netball	Skiing
			Wrestling

Protecting your assets

A contact sport is one which involves significant physical contact between opposing players and therefore could endanger the safety of the teeth. The risk of tooth damage is also increased in physical sports where speed or moving objects - such as bats and balls - are involved. Studies have shown that between 13% and 39% of all dental injuries are sports related¹ and about one in four children in the UK will injure and sometimes lose a front tooth at some stage². With numbers of contact sport participants on the increase, traumatic accidents resulting in dental injuries are also on the rise. Because of this the dental profession as a whole is lobbying for the mandatory use of mouthguards for all school children or club players participating in contact sports. Some dental insurance plans will not pay out if damage occurs during contact sports (including training sessions) and a mouthguard was not worn to mitigate the risk.

According to The British Orthodontic Society it is important for anyone with a brace to wear a mouth guard over their fixed brace to avoid a laceration to the mouth from the brace; to avoid damage to the brace; and to prevent injury to the teeth. Fortunately the brace itself gives a lot of support to the teeth so the main function of a mouthguard over a brace is to protect the brace and the mouth.

The first recorded use of a mouthguard was by boxers and in the 1920s professional boxing was the first sport to make mouthguards mandatory. In those days, the mouthguard or toothguard, as it was then called, was a preformed, thick semi circle of rubber, which was worn over the top teeth.

Technology has improved vastly since those early days of tooth protection and companies are now fabricating mouthguards which are pliable and made from impact absorbing materials such as polyethylene vinyl acetate (pEVA). This is an odourless, tasteless, non-toxic polymer which offers resistance to abrasion and is durable enough to last at least a whole season of sports competition and training. New mouthguards are designed to fit comfortably in the mouth and are not bulky, allowing easy speech, swallowing and breathing.

Mouthguards with braces

The British Orthodontic Society advises that conventional mouthguards do not work with braces because the teeth are shifting, which means they become ill-fitting very quickly. Fortunately there are several different types of 'ortho-guard' mouthguards specially designed to fit over fixed braces and the British Orthodontic Society recommends that this is the best type to use with a fixed brace. The orthodontist will be able to supply an appropriate mouth guard or advise the patient where to obtain the most suitable one to suit their needs:

Ortho guards. Some companies are now making special off the shelf 'ortho-guard' mouthguards for patients with braces which feature a channel or trough to accommodate the brace and allow for tooth movement.

'Boil and bite' mouthguards can be shaped to fit by softening in boiling water and then sucked to mould to the contours of the mouth. This means that as the teeth move, the mouthguard can be remoulded to adapt to the new shape of the mouth.

Custom-made mouthguards. Because of the movement of teeth during orthodontic treatment, a tailor-made gumshield would need to be changed frequently, so may not be a viable option for the orthodontic patient unless the fixed appliance has been fully fitted before the mouthguard is made. The custom-made mouthguard supplier should make the guard so it allows the teeth to move during treatment and must instruct the user about how to modify the mouthguard if it becomes too tight. If a great deal of tooth movement takes place wearers may need a second mouthguard after about a year's treatment

The following are the key factors when selecting the right mouthguard:

- It should be comfortable, well-fitting and not prone to dislodging on impact
- It should provide adequate thickness of material (4mm) over vulnerable areas to reduce impact forces
- When biting lightly on the guard, large areas of its biting surface should be in contact with the teeth in the opposing jaw, so minimising the risk of jaw fracture

Sporting chance

Advocacy by the American Dental Association led to the mandatory use of mouthguards for high school football as early as 1962 and currently, the US National Collegiate Athletic Association requires mouthguards for four sports (ice hockey, lacrosse, field hockey and football), however, the American Dental Association recommends the use of mouthguards in 29 sports and exercise activities.

In the UK, alongside the British Orthodontic Society, the British Dental Association, Rugby Football League Association, British Boxing Council, English Hockey Association and Rugby Football Union, to name but a few, emphatically recommend a gumshield should be part of the sports kit. The Rugby Football Association's website comments that:

"In the best interests of players' safety, we strongly recommend that all players wear a mouthguard during any contact rugby sessions. It has been shown

that this significantly reduces the incidence of dental injuries"

Iain Hathorn, Chairman of the British Orthodontic Society concurred:

"My experience in dealing with rugby players in the Premiership is that the sooner mouthguards are worn the more likely they will be worn in a playing lifetime. Senior players who do not wear mouthguards are very vulnerable to tooth trauma - my most recent experience involved an international player who lost three teeth, which was avoidable if a mouthguard had been worn!"

This is borne out in cricketer Sir Ian Botham's autobiography where he describes how he lost his teeth during a match:

" Halfway through the shot, I realised I was way too late on the ball. Before I had digested that alarming fact, the ball had smacked into my face and in those far-off days batsmen did not wear protection. In an instinctive act of self-preservation, I had thrown up my gloved right hand and that absorbed some of the impact, but the ball still smashed my hand into my mouth with savage force. I dropped my bat and backed away, cursing and spitting blood, then realised that I was spitting bits of teeth as well. Two teeth had been knocked out and another two broken off at the gum line. Even more alarmingly, they were on opposite sides of my mouth and the ones in between were noticeably looser than they'd been a few moments before."

Taking care of it

It is important to look after the mouthguard to ensure its longevity and continued effectiveness. It should be rinsed with cold water or a mouth rinse before and after each use and/or cleaned with toothpaste and a toothbrush. Occasionally the mouth guard should be washed more thoroughly in cool, soapy water and rinsed thoroughly. It should be placed in a firm, perforated container to store or transport it. This permits air circulation and helps to prevent damage. The mouthguard should be protected from high temperatures - such as hot water, hot surfaces, or direct sunlight - to minimise distorting its shape.

Before every use it is important to check the mouthguard in good light for any visible tears, particularly if the material is becoming worn or thin. The user should also identify any rough areas as this may indicate splits or cracks. This can be done by running a finger along the non-fitting surface of the guard which comes into contact with the opposing teeth. This surface must also be checked for damage following any heavy blow to the mouth or jaw.

No mouthguard lasts forever and with use, the biting surface may flatten, wear or become thin over the biting edges of the front teeth, allowing the player to bite through the plastic during use. Once damaged, the mouthguard may fail in its 'duty' to protect.

The mouthguard should also be inspected regularly to check its fit; this is particularly important for children who are still growing and for those who wear orthodontic braces.

If you would like to know more or need recommendations about orthodontics including where to find a local orthodontist, the British Orthodontic Society is the only dedicated source of impartial information in the UK. Please visit www.bos.org.uk.

Orthodontics is the largest of the dental specialist groups and The British Orthodontic Society is dedicated to advancing the science and practice of orthodontics for the benefit of patients. Alongside its traditional focus on research and on promotion of the highest clinical and ethical standards, the Society and its members aim to increase understanding of orthodontics and the benefits offered by treatment.

References

1. JADA, Vol. 127, June 1996

2. Patient UK

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