Bucco-dental prevention and hygiene in sports circles *

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The large number of bucco-dental disorders observed in sportsmen, with the resulting risk of reduced performance, shows the urgent need to draw up a programme of bucco-dental prevention.

As a matter of fact, dental decay and parodontopathic disorders can lead to infections elsewhere in the body, such as for example in the heart, kidneys, muscles, joints, etc...

These disorders, which are as a general rule latent, tend to break out when the organism is subjected to great strain or effort. They can therefore become a real handicap in intensive training, and even prevent an athlete from competing at all. For these reasons and in order to avoid such risks, the bucco-dental supervision of sportsmen is of vital importance.

Dental decay is a multifactorial disease in which three groups of factors intervene: bacteria, food and what one might term predisposition.

Bacteria multiply in the dental plaque, a soft whitish coating, and adhere to the surfaces of the teeth. These bacteria feed on the sugary residues of food and break them down into cariogenic acids that attack the enamel and trigger off the process of decay.

The same bacteria synthesise enzymes and toxins, which are very harmful to the tooth’s support tissues. Parodontopathic disorders are caused by repeated attacks on the accumulation of dental plaque.

Prevention therefore consists in eliminating dental plaque from the mouth and avoiding anything that can cause it to form.

At present, sport is practised at all levels of society and at an increasingly early age. Hence the urgent need for preventive action.

The means at our disposal are many and varied, and are located in four different but related sectors: food, prophylaxis by fluoride, bucco-dental hygiene and early detection.

Food

According to Laufer: “Tooth decay is a disease closely bound up with the imbalance to which many people voluntarily subject themselves when they absorb food too rich in carbohydrates or in excessive amounts.”

Glucids are used particularly by nerve cells and muscles at times of strain and effort. Knowing this, athletes have a tendency to take in too much sugar. This is particularly true among cyclists, over 50% of whose intake of glucids consists of refined sugars.

A high rate of tooth decay has been observed among cyclists.

“Frequency of intake critical”

But more significant than the amount of intake in determining the seriousness of tooth decay is the frequency of sugar intake between meals and, consequently, the length of time during which the tooth’s enamel is in contact with the sugar substances. The most harmful foods appear to be sweetened chocolate and certain carbonated beverages containing sugar and acid.

It has been noticed that teeth decay more readily in the first two to three years after their appearance: during this period, the enamel undergoes a slow maturing, a gradual process of mineralisation. The “mature”, better mineralised enamel is more resistant to decay. This explains why decay

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The most effective way known at present of preventing dental decay is to ensure that people absorb optimal doses of fluoride in their drinking water throughout their lifetime (W.H.O.).

As a matter of fact, water is the best vehicle for introducing fluoride into the organism. Fluoride may be added to the mineral water drunk by sportsmen (some brands already contain it: Vichy, Badoit, for example).

Other methods may be used:
- The systematic issue of fluoride tablets, to be chewed or allowed to dissolve in the mouth, in the evening before going to bed, and under proper supervision at the rate of 2 mg of sodium fluoride per day per person. This is particularly important for children between the ages of 6 and 14.

There also exist a number of fluoride vitamin preparations which sportsmen seem more willing to accept.

The processes of fluoridation by internal means (fluoridated water, fluoride tablets, fluoride chewing gum...) are only effective if they are used from early childhood, for their effect on the mature enamel is very slight.

The simplest method is the local application of fluorides, which help to increase the resistance of the enamel and protect it (toothpastes, mouthwashes, gels). In addition, it is only by local action that the ionised fluoride acts on the dental plaque: this action requires a much higher concentration of fluoride in the saliva than that produced by substances that are eaten or drunk.

It would be desirable therefore to provide athletes with:
- toothpastes and mouthwashes containing suitable quantities of fluoride,
- unsweetened chewing gum containing fluoride, instead of the chewing gums usually found on the market.

Fluoride has a great affinity for calcified tissues and becomes fixed in particular on bones. The early alveolyses observed among top-level athletes could perhaps be counteracted by the absorption of sufficient quantities of fluoride. In fact, “statistics show that the protection afforded by fluoride continues at the age-and even beyond-when periodontitis starts to play an important role in the loss of teeth” (W.H.O.).

The affinity of fluoride for calcified tissues (teeth and bones) is the reason for its anti-decaying properties but also for a number of toxic phenomena. Prolonged exposure (many years) to excessive fluoridation may lead to

occurs most frequently in teeth that have newly emerged on the dental arch.

This period of particular vulnerability of teeth, when the local effect of diet is the greatest, occurs in the case of permanent teeth in children aged between 6 and 14.

It is precisely at this age that many children start to take up sport seriously.

Furthermore, any food imbalance during a period of rapid growth can affect the general development of a child.

What is more important for a sportsman than keeping fit and improving his performance? He must be made to understand that a well-balanced diet is of vital importance in helping him to say fit and reach his peak. Teeth are the first mechanical elements of digestion.

While contact with certain foodstuffs is particularly harmful for teeth, just after they have emerged, other foods on the contrary play a favourable role and certain oligo-elements even increase the resistance of teeth to decay. This is the case in particular of fluoride.

Fluoride

Fluorides have the property of:
- increasing, by both internal and local means, the resistance of the enamel of the teeth to attacks of acid,
- limiting or inhibiting, by their presence in the mouth, the proliferation of bacteria in the dental plaque and, consequently, the production of enzymes and toxins.

They considerably reduce the number of cases of decay and decrease the frequency and seriousness of periodontal disorders.
fluorosis, but a distinction should be made between dental fluorosis and osseous fluorosis.

Dental fluorosis, which is not serious in its early stages, takes the form of small unattractive whitish splotches. This dysplasia can only occur in very young children who absorb large quantities of fluor while the enamel is in the process of forming. Once on the dental arch, a tooth can no longer be affected. Osseous fluorosis appears only after the intake of very strong doses (more than 10 mg per day) for a long period of time (over 10 years). It occurs only in a few particular zones where there is an excess of fluoride in the water owing to geological reasons or as a result of industrial pollution.

The seriousness of fluorosis depends on a number of factors:
- the quantity of fluoride absorbed and the length of time during which it is taken, but also:
- the nutritional condition of the persons involved,
- the physical strain to which they are exposed (it is in the joints subject to the most strain that pain and stiffness are felt with the most intensity - W.H.O. 1972).

Although it is important to know and check the total quantity of fluoride absorbed by an individual, it should be noted that no prophylactic product causes any toxicity under normal conditions of use.

Actual hygiene

The toothbrush is still the best weapon against dental plaque. Teeth must be carefully brushed after every meal, particularly in the evening before going to bed, as sleep slows up the secretion of saliva and favours the development of dental plaque. Regular brushing should be followed by the use of dental floss to get rid of any parti-

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cles of food still left in the spaces between the teeth. Provided the plaque is broken up every 24 hours, its activity will be stopped before the layer of enamel can become decalcified. Sportsmen should be given plaque detectors so that they can see it for themselves and want to get rid of it.

Athletes must be persuaded to take preventive measures, automatically, and to have their teeth examined regularly by periodic visits to the dentist for preventive reasons and not only when forced by toothache, which often occurs only after the harm has been done.

It is important to make these simple preventive means available to athletes rather than resort to a number of gadgets of which they will soon tire.

**Detection**

Provided it is early enough, detection has the advantage of avoiding serious damage to teeth and their loss, as decay is a disease that does not cure itself and continues to spread if not treated.

X-ray examinations make it possible to detect latent seats of disease not visible in an ordinary clinical examination.

The success of a programme of prevention will depend to a large extent on the motivation of athletes, who should be made aware of the seriousness of the problem by a widespread campaign of information:

- sports journals,
- showing of films,
- direct contacts with sportsmen and coaches.

This calls for the close cooperation of a whole team: athletes, coaches, doctors, dieticians and dentists.