

LOOKING FOR THE BEST PREVENTION



This paper, entitled "*Prévention des traumatismes extrinsèques et intrinsèques du sport*" (The prevention of extrinsic and intrinsic sports traumas), was presented by Doctors **F. A. Commandré, P. Renstrom, H. Zakarian and A. Sentissi** at the 22nd Congress of the General Assembly of the International Sports Federations, which dealt with sports medicine.

Individuals, sports organizations, major companies and authorities are encouraging the development of sports and physical activities which, as we near the end of the century, are attracting more and more people regardless of their class, age or physical condition. This is a result of the impact of the media and its ability to create and magnify a need.

The motives behind such activities vary according to the desired gains (political, financial, philosophical or other). Those in the medical professions believe that athletic and physical activity improves one's health by lowering risks (cardiovascular accidents, counteracting a sedentary lifestyle due to modern working methods and retirement, and using increased leisure time for physical activity) while offering the best way to live a healthy life (to "feel good", especially for senior citizens and handi-

capped persons). The jogger or marathon runner gets his drug (the role of endorphines) from running many kilometres. This attitude is helped by today's hedonism, the pursuit of pleasure with least effort, today where the quest for pleasure and the ideal figure is the ultimate goal.

Physical activities involve a certain cost which the authorities and insurance companies have undertaken to pay. The accidents and injuries resulting from this ath-

letic indulgence have considerable economic repercussions : if one considers medical (hospitalization, care), social (total or partial disability, death...), and economic costs (lost time for injuries, absence from school, loss of production).

Doctors and sports officials must constantly be aware of ways of preventing sports accidents. This individual (personal suffering) and at the same time collective risk (effect on the national economy) must be dealt with at two levels :

- preventing accidents and their damage to the health of those who practise sports and to the economy.
- educating the population, teaching everyone about the risks and how to pace oneself.

Such prevention of the harmful effect of physical and athletic activities is an important health concept from both individual and collective aspects.

There are two types of preventive measures : individual measures and those involving the environment. Individual measures may be active, “intelligent” such as fitness and bio-physiological tests, or passive such as wearing a helmet and other forms of protection.

ACTIVE PREVENTION

An athlete’s most effective protection is being aware of his health, whatever his age and fitness for a given physical activity. A physical or psychological examination, cardiorespiratory, osteo-articular, and maximum oxygen intake assessments, are all ways to help evaluate a person’s fitness, especially that of children and elderly persons, and to help them choose an activity where the risks are proportionate to their capabilities. A sports doctor will prescribe sports and physical activity before considering more detailed tests as to a patient’s health status and level of fatigue, especially when dealing with youngsters (see Intense premature athletic training, J. Personne). A

medical follow-up, and regular fitness check-ups are necessary for any form of prevention, especially for micro-traumatic injuries (problems with balance, dizziness or muscle weakness, etc.).

DIAGNOSIS AND THERAPEUTIC MEASURES

The fascinating techniques of modern clinical diagnosis are indispensable. Today, doctors get help from computers that do biological assessments, modern imagery (scanning, magnetic resonance, echography) and endoscopic (arthroscopy) or biopsic (muscles) methods. In addition, treatment is adapted to the situation (on-the-spot cryotherapy, non-steroid anti-inflammatory drugs, prosthetic ligaments, arthroscopy) and can reduce complications, although the necessary post-operative rest should not be reduced when tissue has been injured (C. Tippon’s Law).

Re-education, physiotherapy, rehabilitation, proprioceptivity and retraining the injured area to handle exertion are essential elements for complete recuperation.

The athlete may be obliged to start training again using an adhesive bandage or a more complicated support (knee brace) if the joint is not yet stable enough. Nevertheless, the doctor should not give in to the demands of the athlete or his coach to allow a quick resumption of training before tissue has had a chance to heal completely, even if the athlete feels no pain, and has regained his normal muscular strength and articular mobility.

ADVICE ON TRAVELLING AND CLIMATE CHANGES

The classic rules of hygiene, vaccination and traditional chemoprophylaxis should be taught and respected. In this way Fausto Coppi’s fatal experience will not be repeated. He was an Italian champion who died of malaria on his return from an African tour.



No taking up training again after an injury without medical advice.

Before leaving on a trip, teeth should be checked and the necessary vaccinations taken care of. Any cavities should be treated and tetanus shots should be brought up to date. Medication against infectious hepatitis should not be forgotten.

For the trip itself, there are various recommended chemo-prophylaxes for malaria, *Filaria loa*, and intestinal troubles. Strict hygienic rules should be followed when it comes to drinks, mycosis, bilharziasis and sexually transmitted diseases. A doctor should make sure he takes along an appropriate kit. Once back home, it should not be forgotten that the athlete had been in a country that posed certain risks to his health. At the slightest sign of anything unusual, a clinical and biological assessment should be made. Some simple drops of medication would have saved Coppi.

Shoes should be the object of constant attention.

PREVENTION DURING PHYSICAL ACTIVITY

The problems of dehydration and regulating body temperature, although already familiar to the Tuaregs and doctors in the Second World War, were not really considered in sports medicine circles until after the 1976 Boston marathon and the declaration made by the American college of Sports Medicine in 1975 on hydration in long distance races. Small quantities of water at a normal temperature, and definitely not icy-cold water, should be taken often by the runner both during and after the race.

PHYSICAL PREPARATION BEFORE EXERCISING

One should always do warming-up, stretching and limbering up exercises in order to prepare the locomotor system for exertion. This essential preparation will reduce injury to muscles and tendons and make sure the necessary reflexes are functioning properly.



PASSIVE PROTECTION

Equipment. — Many types of protective equipment are used in sports. Since the opponent is one of the principal causes of contact, collisions with other players or obstacles on the playing field are frequent. The fencing mask is undoubtedly one of the oldest types of protection. In 1913, Ted Kid Lewis introduced the first mouthpiece. In 1929, the American football player added facial and dental protection to his helmet, thereby reducing accidents to a minimum. Hockey and rugby were quick to impose the same standards. In this way all types of protection, as in American football, can transform an athlete into an armour-clad cavalier from the Middle Ages.

Footwear. — Of the different items of clothing an athlete wears, the shoes are especially worth mentioning because of their pathological effect on the feet as well as the knees and lumbar regions. The

evolution in ski boots is a perfect example : sprains and spiral fractures of the leg have been replaced by knee injuries. A shoe protects the athlete, that giant with clay feet, from injuries by thorns and gravel, as well as from the ravages of climate, freezing and especially the impact of running, and kicking balls. Many research teams are studying the problem of sports shoes : cleat placement, flexibility or rigidity of soles, the height of stiffeners, not forgetting the risks of skidding and poor ankle support.

Simply wearing the same pair of shoes for several games double the risk of pathological injuries. This is why footwear should be checked after every game.

Some simple rules must be remembered when making a sports shoe. It must be comfortable and adhere to the playing surface, especially artificial surfaces (neoprene, rubber). It must be flexible as well as resistant to absorb impact as much as possible (sorbotane or podiane) and have ventilation to reduce humidity and fungal diseases. Of course shoes must be adapted to the individual sport (soccer, rugby or running cleats, skier protection, riding boots). In any situation, proper equipment is one of the most important elements of prevention.

Sports Equipment. — Sports equipment must be checked in detail as any deficiency poses a threat to the athlete and to the spectators. Proper ski boot settings to avoid acute trauma, and proper racket balance (strings and tension, size and diameter of the neck, etc.) to avoid the micro-traumatic aspect of tennis elbow are necessary means of prevention, the latter case, however, is more complicated because the micro-trauma results from the accumulation of micro-injuries.

Unnecessary risks can also be avoided by removing rings and such before basketball and volleyball games.

ENVIRONMENTAL PROTECTION AND GAMES RULES

Authorities and organizers must ensure that there can be no injuries due to the area

where physical activities are carried out, for example, stadiums, circuits, and gymnasiums. There are two ways to do this, either by verifying the lay-out of the sports sites, or by establishing regulations for the sports activity itself. Since serious traumas usually result from uncontrolled, "wild" playing, the disrespect of game rules or the referee's ignorance of them, injuries at this level may be prevented through strict vigilance, stringent refereeing, fair play on the part of the players, and maximal use of protective equipment (helmets, mouthpieces, squash glasses, proper cleats, etc.). Although it may be necessary to change game rules, the best guaranty is educating individuals. Thus one learns about the risks while avoiding violence thanks to the teaching of sportsmanship.



Not respecting the safety rules can have fatal consequences.

Some sports have such specific rules that forgetting even the most minor one could be fatal (because of the type of activity). The best example is water sports where there is a risk of losing consciousness due to immersion in cold water and drowning. Water skiing has the highest accident rate, usually because the safety rules designed for the dangerous water environment have not been followed. In this respect the American Coast Guard statistics are typical : collision with a small

Every defect in a piece of sports equipment represents a risk for the athlete and the public.



craft constitutes 51 % of accidents, with another floating object it is 5 %, collision with a moored object is 12 %, injury caused by a blade is 6 %, and miscellaneous causes make up the remaining 26 %. This shows that the rules of this holiday sport should be strictly followed : respecting traffic lanes and speed, wearing appropriate swimwear and a life belt, having a third person in the boat, physical preparation, etc.

In underwater diving there are three major causes of accidents : the dive itself, the equipment (10 %) or the disrespect of diving tables — the 30 metre rule.

In mountaineering and mountain sports in general accidents also occur frequently. The trauma is serious and often complicated by the cold and altitude. It is very important to know about the health aspects, to choose the best equipment, be aware of the weather, know the trail, etc.

It is essential to inform athletes and to draw their attention to health education. It

should begin while the athlete is still in school and should explain the risks involved in physical activities and sports, the social and economic consequence, emphasize fair play and respecting the rules, avoid the chauvinism pushed by the media, discourage violence and drug use and encourage the use of collective and individual methods of protection, lead to better training, warm-ups, stretching and recovery. Medical and para-medical opinions should be requested, especially for children, youngsters and senior citizens.

The prevention of traumas related to physical activities and sports, whether they are extrinsic, direct and acute, or intrinsic, indirect and micro-traumatic, is an individual and collective must for public health. This prevention rests on two types of measures, one of which is active protective measures based on clinical fitness and biophysiological tests and x-rays. Such an examination would allow the athletes to choose an appropriate physical activity. Of course this procedure must be adapted for a 7 year old, a handicapped person, a senior citizen or a champion.

RULES TO REMEMBER

Exact diagnosis and rapid, appropriate treatment, thanks to the sophisticated technology of today, should allow a functional recovery and the best possible rehabilitation of the injured area. If a general health education programme dealing with athletic activities and their environment were taught throughout school many errors could be avoided and the sense of fair play developed. Proper physical preparation involving the correct training with the appropriate movements, warm-up and recovery before and after exertion, helped by stretching, will avoid unpleasant micro-injuries to tendons and muscles.

Passive measures of prevention for avoiding injuries are necessary. They are essentially based on proper respect and application of the rules of a sport, on the use of individual protection and protection of the environment. The main objective is

to make doctors, coaches, sponsors, athletes and other sports persons aware of prevention. This in turn will help an individual to avoid painful health problems and reduce collective economic and social costs. A sports code similar to the work code for children should be written for athletes, and the ethics of the press which induces us to feel sorry for working children and rejoice over the marathon boy, making him a sports hero when he is but a slave to his sport should be changed.

Let us hope that the only sports trauma one day will be the supporter's raw throat and that the athletes will have but victory.

* Netherlands: 100 million guilders in 1979; FRG : 5000 million marks in 1983; Switzerland : 9,9 million francs for skiing accidents between 1978 and 1980, United States : 6 million dollars for eye injuries alone in 1980 and 100 million dollars for roller skating accidents in 1983; In France, soccer "cost" 150 million francs in 1986 and 2000 cases of lost time for injuries.