Epidemiology of Football Injuries *

by Dr. Abdel Mohamed Halim,
IOC member in Sudan,
Vice-President of FIFA Medical Commission,
Dr. K. Y. Mustafa
and Dr. Nasr Eldin A. Mahmoud

The prevalence of football injuries is examined, factors which predispose to football injuries are discussed and preventive measures to reduce incidence of injuries outlined.

Introduction

Any sports activity carries with it the risk of injury. It is the endeavour of those connected with sport, particularly physicians, to minimise these risks. Like in any other branch of medicine, prevention is better than cure. Only by studying injuries that have occurred can they be prevented in the future. These studies consider:

a) the incidence of injuries to gain an appreciation of the dimensions of the problem;

b) the anatomical localisation of injuries. For every sport, certain parts of the body are more liable to injury than others. Once these are known, methods can be devised to protect the more susceptible parts if possible;

c) tactics likely to cause injuries may be eliminated by modifying the rules of the game;

d) analysis of seasonal variation in incidence might throw light on causative environmental factors;

e) study of physical and psychological characteristics of injured players. Some of the detrimental qualities may then be modified in training.

There are a large number of variables and interactions among these factors involved in the predisposition of players to injury. As it is difficult to isolate one factor for study under controlled conditions, analysis is not an easy matter. The term epidemiology of injuries refers to studies related to these factors.

1. Anatomical Description of Injuries

It is sufficient here to give a general description pointing to the important features revealed by recent studies. Full accounts may be found in textbooks of orthopaedic surgery related to sports by D.H. O’Donoghue 1 and in the FIFA accident prevention study by J. Vittori 2 which reported on 1,300 matches. There were 1,400 accidents, of which 15 % involved the head and upper limbs, 10 % the chest and abdomen and 75 % the lower limbs. The injuries predominantly concerned soft tissue. This study pointed to injuries which are usually neglected: injuries to the face, nasal bones, eye lesions and skull injuries. Such injuries are important not only because they occur frequently but because of the grave consequences that might follow if neglected.

Mauricio N. Wainer 3 studied 2,860 football injuries in Chile between 1962-1966. 89 % were acute injuries, 44 % of them involved torn muscles, 34 % sprains in knee and ankle joints, 7 % meniscopathies and 4 % fractures. Chronic injuries which prevented full participation in games for tons periods constituted 11 % of the cases. In a preliminary study in Sudan 4, 50 national team players were studied for 3 years. 38 % of the players sustained acute injuries and 8 % chronic injuries. Ankle and knee joint sprains made up 70 % of injuries and torn muscles accounted for a further 10 %.

The pattern so far is different from other studies in the high incidence of ankle and
knee sprains and relatively lower incidence of muscle tear. This can be explained by the fact that the players were careless about wearing protective clothing and that their muscles were poorly developed.

The mechanism of injuries to muscles, tendons or joints follows a pattern. Injury to tendons and muscles is produced by:

a) an extrinsic blow;

b) intrinsic causes by sudden muscle contraction;

c) overuse producing muscle strain. Injuries to joints are also produced by direct trauma or sudden forced or extreme movements.

2. Physical Characteristics of Players

Age:

Analysis of the influence of age on incidence of injury poses problems as it is difficult to control this factor. This is because age is a measure of the time the player has been interacting with environmental factors and is therefore inseparably associated with biological growth and experience. Players of the same age show marked variability in measures of strength, motor ability and working capacity. Generally, younger players may lack full physical development and experience and are therefore prone to injuries whereas older players show slow reflexes and are therefore also liable to injuries. Full analysis awaits more studies.

Body weight:

The influence of body weight on incidence of injuries in football players has not been analysed. In American football, E.B. McCoy showed that incidence of injury is less in heavier players. This is certainly due to an increase in muscle mass rather than adipose tissue. It is known that obese subjects are generally more prone to accidents as they have to move their mass in space and hence do more work. Muscle hypertrophy on the other hand increases muscle power and tone, which is the most positive factor in safety and protection. This condition allows for quicker reactions. A. Bender demonstrated that the strengthening of muscles by strength building programmes reduced injuries.

Posture:

Correct posture protects against sudden and unexpected strains. The inactive slumping posture with low muscle tone predisposes to injury, while the alert posture with increased muscle tone protects ligaments.

3. Psychological Factors

Increasing attention is being given to psychological of the injury problem in sports generally. L. Brady believes that the centre of the accident problem lies in the area of personality. He described personality traits, characteristic of “accident prone individuals” or “accident causing players”.

Such traits include: a need to be assured of manliness, a feeling of inadequacy, a feeling of hostility, an inadequate sense of one’s responsibility, concerns of a physical nature, an inability to match aggressiveness, timidity, a feeling of being invulnerable, emotional players highly aroused by jeers of spectators and excessive reaction to stress leading to anxiety.

The agility of the players, which depends on reflexes and perception is an important factor. An agile player with good physical fitness is capable of rapidly changing his posture to escape danger.

4. Conditioning of Players

This refers to the measures taken to ensure that the athlete is optimally prepared for matches. It includes:
a) A balanced programme of training, diet, rest and massage;
b) Resistance exercises to build muscle power, endurance and physical fitness;
c) Learning of lessons of correct running, protective alertness, quick reactions and flexibility of body. Injuries occur more frequently at the beginning of the season due to lack of conditioning.

Although training is the cornerstone of conditioning, it should be carried out at an optimum level with overtraining to be avoided. Overtraining occurs when training exceeds adaptation capacity. Symptoms and signs of overtraining include: decreased performance, weight loss, increased pulse rate, irritability and easy fatiguability. Players should be watched for these signs and symptoms as overtraining predisposes to injury. This may explain the increased number of injuries in the second half when fatigue sets in.

5. Environmental Factors

The most important factor is aggressiveness of other players and the ability of officials to establish rules to stop dangerous tackles and the ability of referees to enforce these rules.

Adverse climatic factors particularly effect players not adapted to these conditions. In the tropics players lose a lot of fluids and electrolytes during games as demonstrated by Halim et al. This predisposes to dehydration, muscle cramps, lack of concentration and increased injuries in the second half. Similarly players not adapted to high altitudes may face the risk of hypoxia leading to lack of concentration.

Protective Clothing:

Players who do not wear protective clothing invite injuries. Shins need to be protected, as do feet by bandages and good quality shoes.

More research is required to design better protective gear for football, and legislation to make the wearing of such equipment mandatory may also be necessary.

Safe Grounds:

If the fields are not of top quality they predispose to injury. Recently the question of artificial turf was raised as a preventive measure. Goal posts if not rounded and safe may predispose to injury. As many games are now played under floodlights, it is vital that lighting conditions be excellent.

More studies and analysis of football injuries are required to clarify factors leading to injury.

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A.H. M.

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