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Dr Urs Vogel, Chairman of the UEFA Medical Committee.

EDITORIAL

By Dr Urs Vogel

ERADICATING

COVER
Atem Milevskiy played for Ukraine in the European Under-21 Championship Final Round and then represented his country again in the World Cup in Germany. Any player who takes part in two top-level tournaments one after the other needs to be monitored closely by the medical staff.

PHOTO: M. RIOPA/AFP/GETTY IMAGES

The FIFA World Cup 2006 is over. And the matches in Germany and the emotions and events generated by them have given us a lot to digest. As Albert Camus said, it was football that taught him all he knew about moral values.

The need for football stars to show self-discipline has become even greater in view of the media omnipresence. Players at the World Cup sometimes found it hard to remember that their every move on the field of play was being recorded by over a hundred cameras. Dives that might not have been spotted in club football were suddenly and totally exposed to public scrutiny. Every spiteful gesture, every argument, every single word can be picked up through directional microphones or lip-reading. Every player's conduct can have an immeasurable impact.

The increase in footballers' income has entailed an increase in their social responsibility. Every player involved in a World Cup or European Championship is a role model and he needs to be repeatedly reminded of this responsibility throughout his career.

Measures need to be taken not only to prevent injuries, illness and doping but also to penalise misconduct and the failure to act as a role model. Both UEFA and FIFA are actively involved, including financially, in the fight to keep football fair, free of doping and fit to be regarded as an example of sporting values.

This means that there are vitally important lessons to be learned from injury statistics, social commitment and anti-doping measures. Action is necessary and will almost certainly continue to increase in scope. I am thinking of support being given to the national associations, not only financially but also through the provision of know-how and doing more in the shape of grassroots sport, mini-pitches, further education courses, anti-doping measures and much more besides.

UEFA's second seminar for doping control officers (DCOs), which took place recently in Nyon, is a good example of UEFA's endeavours to make constant improvements and consolidate what has been done so far. The objective is to eradicate doping from football. In Europe, UEFA has 35 experienced, well-trained DCOs who took refresher courses or undertook further training at the seminar. In addition, training was given to 11 new candidates, exclusively doctors (men and women) who already have professional experience.

Since any doping control with a positive result has wide implications, UEFA has insisted since the outset that controls should be carried out in an absolutely professional way. In the last

Doping Control Officers seminar in Nyon.

DOPING FROM FOOTBALL

few years, we have been constantly adding to our experience so it is now hard to imagine doing without such seminars, both for training purposes and for the exchange of experiences.

In over 22,000 controls worldwide, the cases which have tested positive amount to the tiny proportion of 0.4%. Last season, UEFA carried out over 1,300 controls, of which one-third were out-of-competition controls and two-thirds in-competition controls. Two of the seven positive cases have limited relevance, as they were the result of doctors simply omitting to record a Therapeutic Use Exemption (TUE) before the control. It can certainly be said that football, fortunately, has a low incidence of doping cases.

But it is also important not to over-focus on the stars at the peak of the footballing pyramid – and the articles within this issue of Medicine Matters reflect our growing concern for ensuring well-being at other levels as well. Controls have been extended to youth teams. Unfortunately, in the Under-19 and Under-17 categories, there have been two positive cases involving cannabis and two involving cocaine. This obviously reflects a social reality. Many years ago, the use of stimulants such as amphetamines ('speed') in football was also a reflection of a social phenomenon. Most instances of this kind of doping were eliminated through controls – which was a positive development since the pathological aggression induced by these drugs was potentially dangerous for opponents.

Nowadays, other kinds of hard and soft drugs are concerned. But this is precisely what is alarming and it underlines the importance of raising the awareness of footballers at an early age. There is a German slogan which translates as "making children strong" which shows us the way ahead. Taking pre-emptive measures against doping in youth and grassroots football is the important task for today, especially for the national associations. Drug abuse is largely under control in top-level professional football and players in Europe are well informed. But what is the situation in grassroots and youth football?

We have to think about the best way to tackle the problem. Being the most popular sport in the world, football is the ideal environment for conveying the anti-doping message. It also means that in football we carry a particularly heavy responsibility. Directives need to be drawn up and offences must be penalised. But, of course, every case that tests positive has to be considered on its individual merits. There are still a few twists and turns to negotiate but we are certainly on the right track.

AGENDA

October 13 – 14
25th BRUCOSPORT Congress (Bruges)

November 28
UEFA Medical Committee (Istanbul)

November 28 – 30
4th UEFA Medical Symposium (Istanbul)

2006

20th anniversary of founding action of the UEFA Medical Committee

HIGH-RISK – BUT LOWER-RISK

AN UPDATE ON THE UEFA INJURY STUDY CONCERNING PROFESSIONAL FOOTBALL IN EUROPE

BY PROF. JAN EKSTRAND, MD, PHD

There can be no doubt that top-level football is a 'high-risk occupation' in that the incidence of injury corresponds to something between six and nine injuries per 1,000 hours of exposure. As in industry at large, 'injury' can be defined as an absence from work – training or match-play in this case. If workers at a factory were exposed to the same injury risk as professional footballers, six to nine workers out of every 25 would suffer injuries that caused absence from their workplace.

If we define injury as "an injury sustained in any football-related activity which causes the player to be absent from full training or from a match", a squad of 25 professional players can expect, as a rough figure, 45 injuries per season. Of these 45, two dozen are likely to be minor injuries implying an absence of less than one week, and half a dozen are likely to be major injuries causing an absence of more than four weeks.

Statistically, an individual player sustains one or two minor injuries a season and can expect a major injury every third season.

The high-risk nature of professional football was the main reason for the UEFA Medical Committee's commitment to an in-depth study which started in 2001 with the stated aim of trying to help football to become an even safer sport by detecting and highlighting risk and injury patterns. Last season, 17 major clubs participated in the injury study: Arsenal FC, Chelsea FC, Liverpool FC and Manchester United FC from England; Paris Saint-Germain FC from France; AC Milan, FC Internazionale and Juventus from Italy; AFC Ajax and PSV Eindhoven from the Netherlands; FC Barcelona and Real Madrid CF from Spain; FC Porto and SL Benfica from Portugal; Club Brugge from Belgium; BV Borussia Dortmund from Germany; and Rangers FC from Scotland.

Several of these clubs have participated for a full five seasons and it goes without saying that the injury study has now reached a stage where meaningful statistical conclusions can be reached.

Injury risk is not increasing

It is a commonly cited myth that the risk of injury in top-level football is steadily increasing. There are no figures to back up such statements; in fact, the UEFA Champions League study is the first to follow top teams over several seasons. We now have results for five consecutive seasons and, as seen in Figure 1, the total risk of injury has actually decreased over the five-year period. The variations are small from season to season but the trend is a constant reduction in the injury risk. The risk of injury during the 2005/06 season was 22% lower than in the 2001/02 season. We do not know the reason for the lower injury risk but one could speculate that the increased knowledge about injuries gained from this study and the increased communication between club medical teams have been a contributory factor.

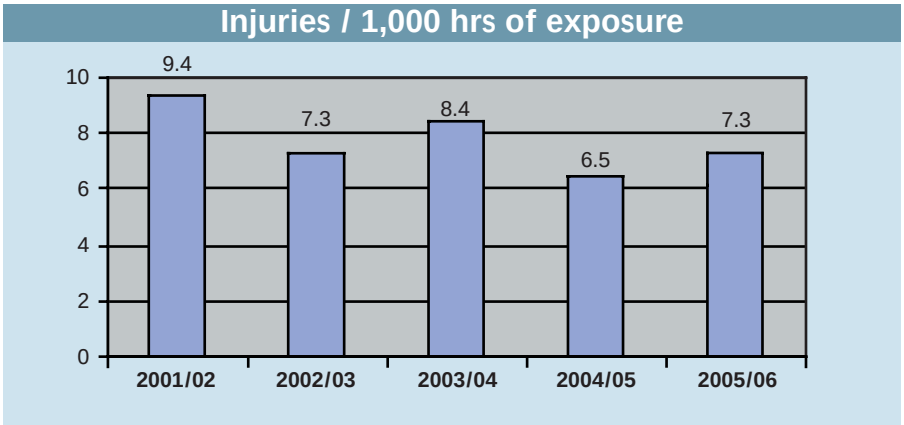


Fig. 1 • Total risk of injury during the five-year study period
(Expressed as the number of injuries per 1,000 hours of exposure)

The risk of injury during training is similar regardless of the level of play.

Injury risk in training

We have found an average of three to five injuries per 1,000 hours of training in this study. There are only small variations from season to season. From other studies we know that the risk of injury during training is approximately the same regardless of the level of play.

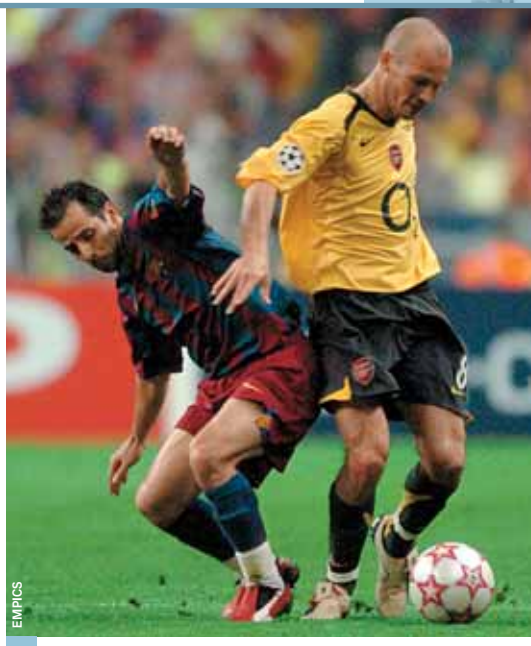
Injury risk in matches has dropped by 14%

It is well known that the risk of injury is greater during a game than during training and also that the risk of injury in match play increases with the level of play. At top level (national teams and major European leagues) the risk is reported to be about 30 injuries/1,000 hours of exposure. The reason for the increased risk of injury at higher levels of football is probably that most match injuries occur in contact situations and the forces created in contact situations are stronger the higher the velocity of the players (according to the law energy = body mass x the square of the velocity).

In the UEFA Champions League study, the risk of match injury has been between six and eight times higher than the risk of injury in training. There is a tendency towards a lower risk of match injuries during the study period. The risk was 31.1/1,000 match hours during the 2001/02 season compared with 26.8 in 2005/06, a reduction of 14%.

Major injuries (absence > four weeks) and performance

In an earlier study in the Swedish Super League during the 2001 and 2002 seasons, a positive correlation was found between performance (league position) and the number of major injuries in the top six teams. It seems clear that injuries affect performance (or is it the other way round?) and teams who can avoid major injuries are more successful.



Despite the ever increasing stakes, the risk of injury in the UEFA Champions League is on the decline.

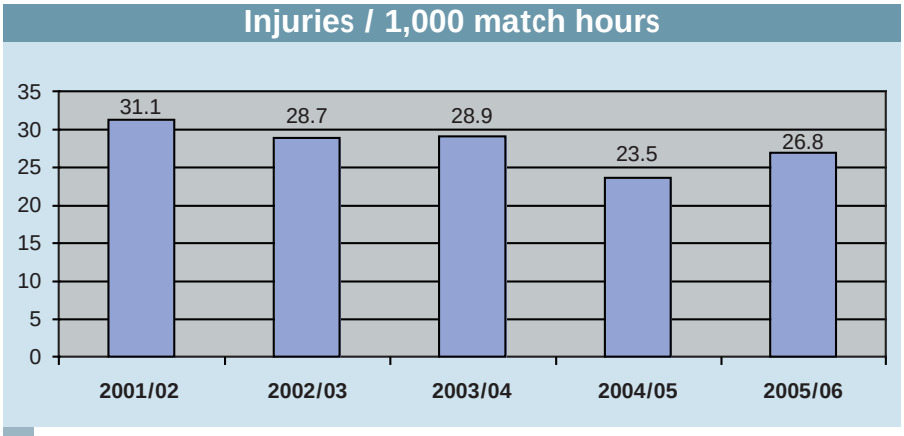


Fig. 2 • Risk of match injury during the five-year study period
(Expressed as the number of injuries per 1,000 hours of exposure)

During the 2001/02 season, teams had an average of nine major injuries, causing an absence of 77 days on average. The total number of days of absence due to these severe injuries amounted to an average total of 693 days for a club with a squad of 25 players. On average, each team always had two players absent due to a major injury.

The risk of major injuries has successfully been lowered during

Muscle strains are among the most frequent types of injury in professional football.

the five years of study. During the 2004/2005 and 2005/06 seasons there were six or seven injuries per team on average, i.e. (as a club average) total absence of 570 days. This means that the absence (in days) due to severe injuries has decreased by 18% during the five-year period. The number of players unavailable for matches and training sessions has been reduced, thus increasing the possibility for optimal team performance.

Risk of ankle sprain reduced by 50%

Ankle injuries are among the most common in football, with previous studies indicating that they account for 11% to 20% of all injuries. In a study of the Swedish Super League in 1982, the risk of ankle sprain was found to be 1.6 /1,000 hours of exposure, meaning about ten ankle sprains per team per season. Further studies of the same league during recent years have shown that the risk of ankle sprain has been reduced by 50% (see Fig. 3 below), which means that nowadays a team can expect about five such injuries a season. The risk of ankle sprain in the UEFA Champions League study is the same (0.8 injuries per 1,000 hours of exposure, an average of five injuries per team per season). There was no significant difference between different countries.

Ankle sprains are normally not severe, the average length of absence from training being two weeks in our study. The problem in football is the frequency rather than the severity of ankle sprains.

The lower risk of ankle sprain and the short rehabilitation period found in this study suggest that top teams have a thorough knowledge of optimal treatment and prevention. But the recurrence rate of ankle sprains was 21% in our study. This indicates that monitored rehabilitation and tests are important before returning to training and matches.

Thigh muscle injuries – the most common at top level

Muscle injury to the thigh is the single most common injury subtype in top-level football and accounts for 23% of all injuries. The risk of sustaining a thigh muscle injury is 1.6/1,000 hours of exposure, which means that a squad of 25 players can expect (on average) ten such injuries a season.

Typically, injuries to the posterior thigh muscles (hamstrings) occur during a fast burst of speed and the frequent occurrence of these injuries in top-level football may reflect the speed and velocity of modern top-level football.

Since this is an injury that creates great problems for top clubs, we are striving to obtain more information with a view to prevention.

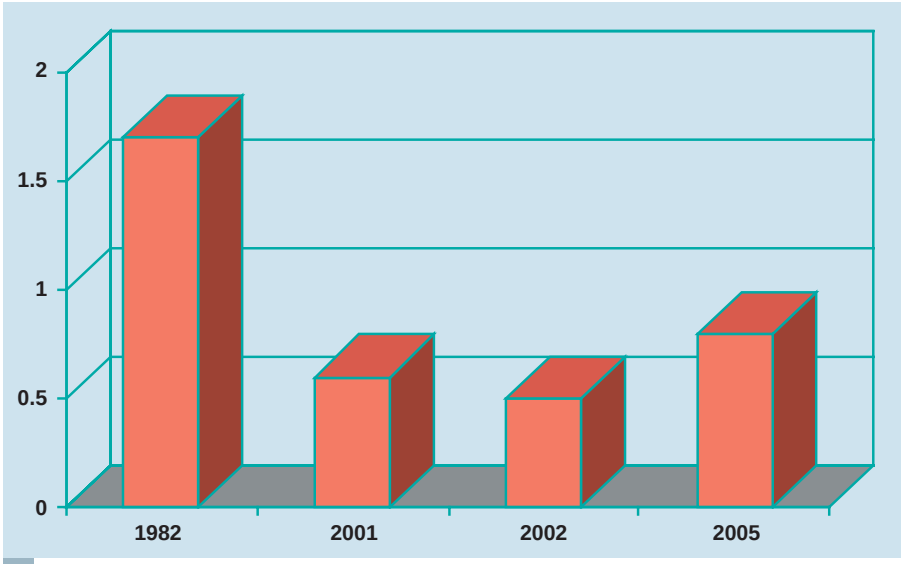


Fig. 3 • Risk of ankle sprain in the Swedish Super League
(Expressed as the number of injuries per 1,000 hours of exposure)

Ankle injuries are very common.

During the last two seasons we have gathered detailed information about thigh muscle strains (strain = injury to the muscle-tendon unit). At this level, all players with muscle injuries are examined by MRI (magnetic resonance imaging) or ultrasonography. Hamstring strains that displayed normal ultrasonography or MRI scans recovered fully (back to full team training or match play) within one week and had a low risk of recurrence. Hamstring strains with pathological findings on ultrasonography or MRI scan caused longer absence (two to four weeks on average) and almost one third of these led to recurrences, meaning that the severity of the injury was underestimated. These re-injuries caused longer absence than the initial injuries.

Fracture of the fifth metatarsal bone – an increasing problem?

During recent years several well-known players have sustained fractures of the metatarsal bones of the foot. The cause of such injuries is either direct trauma or overuse causing stress fractures. The fracture of the fifth metatarsal bone has a worse prognosis than fracture of the other metatarsal bones. The reason for this is that the short peroneal tendon attaches to the upper part of the bone. When moving, a displacement of the fracture can occur, causing a risk of delayed healing. The treatment of fifth metatarsal fractures is either conservative, with immobilisation, or surgical (screwing the fracture together). During our study, we have followed 20 fractures of the fifth metatarsal bone. The average length of absence from full training or match play was 76 days but the absence varied between 63 and 116 days. The absence was the same whether the fracture was treated with or without surgery but the recurrence risk was lower after surgery.

Currently, we do not know the mechanisms behind this type of injury. There are speculations that the injury could be related to shoe wear or surfaces or connected with tissue fatigue in footballers playing many matches.

2006/07 season

For the 2006/07 season, UEFA has invited 21 clubs to participate in the study: the 17 clubs from last season as well as FC Bayern Munich (Germany), Olympique Lyonnais (France), RSC Anderlecht (Belgium) and Celtic FC (Scotland). The specific studies into thigh muscle strains, groin injuries and cruciate ligament injuries will continue and, since the injury had caused concern at many top clubs, a special study of fractures of the fifth metatarsal bone will be initiated.

Fig. 4 • Fracture of the fifth metatarsal bone treated with surgery.

Long-term solutions for cartilage injuries

AUTOLOGOUS CHONDROCYTE IMPLANTATION

By Prof. Mehmet Binnet / Dr Kerem Basarir

Sadly, there is no shortage of football players who are forced to hang up their boots due to some kind of cartilage damage in their joints – especially in their knees, where bones have a large contact area and strong forces applied to them. The knee articular cartilage is a few millimetres thick yet distributes the load in the joint, providing a low-friction surface for the gliding and rolling of joint surfaces against one another; in fact, its friction coefficient is calculated to be lower than that of ice on ice.

A torn cartilage, quite frequent in football, is usually associated with pain and swelling in the short term, making it difficult or impossible for the player to continue an active sporting life. One is tempted to assume that chronic problems are limited to the amateur game and, possibly, lack of adequate diagnosis and treatment. This is often nothing to do with medical skills but rather the player's reluctance to seek advice. But young players at the beginning of professional careers also run the risk of a premature end to their career due to damaged joint cartilage that can lead to osteoarthritis, a condition that can have a dramatic impact on the quality of the player's daily life. It is distressing to see footballers not only obliged to leave the game but to also face restrictions in physical activity due to painful and limited joint motion.

Articular cartilage responds differently to injury than other tissues. It has limited regeneration capacity due to the absence of blood vessels, lymphatics and nerves. Cartilage cells cannot migrate to the site of injury as cells in other tissues can. Articular cartilage injuries that do not penetrate the bone and thereby provide a flow of blood do not heal. The reparative scar tissue consists of suboptimal fibrocartilage, which does not have the same biomechanical properties as original hyaline cartilage, usually leading to fast breakdown of newly formed tissue.

Many techniques have been indicated for facilitating articular cartilage healing. The conventional method of treating a full-thickness chondral lesion was to produce a suboptimal fibrocartilage scar repair by penetrating the subchondral bone to elicit a bleeding response. Fibrocartilage is much less resistant to mechanical wear than normal hyaline cartilage, especially in the weight-bearing areas of the knee. Most of these procedures which provide scar tissue for healing, including debridement, chondroplasty, abrasion arthroplasty, and microfracture, improve pain and function in the short term. However

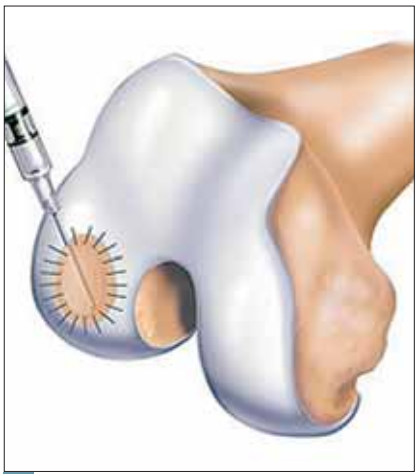
PAVANI/AFP/GETTY IMAGES

these results deteriorate in the long term.

Different treatment modalities providing articular cartilage with similar mechanical properties were introduced in time, such as mosaicplasty. Small defects in the knee can be repaired with cartilage/bone plugs from other non-weight-bearing areas of the knee. However this modality is not suitable for larger lesions located in the weighted portion of the joint, because the source is limited and because they may cause donor-site problems.

The challenge facing orthopedic surgeons today is how to effectively treat larger chondral injuries in young, active football players and avoid significant morbidity with repeat operations and life-quality problems. A new technique for treating full-thickness articular cartilage defects in the knee was introduced in late 1990s, based on taking healthy cartilage cells, sending them to a laboratory for culture, and then returning them for implantation in the damaged area with a view to encouraging the growth of healthy cartilage. This entails two surgical procedures – one to harvest the tiny fragment of normal material, and a second, some weeks later, to perform the implantation. The damaged area is surgically cleaned and then a fragment of fibrous material (periosteum) is taken from a superficial bone like the hip to be sewn over the defect, the cells from the laboratory are injected behind the fibrous restraint, where they start to grow into a sheet of normal cartilage cells. It is called autologous chondrocyte implantation (ACI). It entails a period of four to six weeks of post-surgical physiotherapy but the majority of patients report good or excellent early results.

Success of this treatment is measured by the patient's ability to return to an active, productive sports life without experiencing limiting symptoms. These results have been extended in Europe and replicated in the United States in several centres in intermediate range follow-ups (up to ten years).



Chondrocyte implantation.

Cell transplantation.

Autologous chondrocyte implantation has been performed on football players in Turkey since 2000 and cell culture facilities have been constructed in the Biotechnology Institute of the Faculty of Medicine at Ankara University. This followed years of laboratory and animal research performed by Prof. Mehmet Binnet, Dr Kerem Basarir (orthopedics department) and Prof. M. Elcin (tissue engineering). Although physical preparation and training methods improve with time and cartilage injuries should, hopefully, become less frequent, these injuries do occur and there is a good chance of achieving long-lasting successful responses via autologous chondrocyte implantation.

WE CARE ABOUT FEET

By Mike Healy, Chartered Physiotherapist, MCSP MSc,
FA Medical and Exercise Science Department

In today's society image appears to be everything. It is thus unsurprising that footballers can spend hours selecting boots and training shoes based upon their appearance, rather than comfort, fit and function.

The more privileged footballers may be contracted to wear a certain manufacturer's footwear, but that does not mean they can just step into their shoes. Many players may need to have orthotics (foot supports) inserted to correct 'biomechanical imbalances' and to make them wearable. Despite insuring their feet for huge sums of money, many footballers give them very little attention unless they begin to hurt. Yet a few minutes care may avoid days, weeks, or even months lost through injury. In a full career, a footballer can cover over 300,000 km on the training ground and football pitch. Through the appropriate selection of footwear and high standards of foot hygiene, the player can maximise his playing time.

The anatomy of the foot

The human foot is comprised of 26 bones, a wealth of ligaments covering an expanse of joints, four intrinsic 'layers' of muscles, and 12 major muscles which originate in the lower leg and whose tendons descend into the foot. In order for the footballer to achieve their best, all these components must work with synchronised precision. The foot must act as an adaptor on a variety of surfaces, as a shock absorber, as a rigid lever for propulsion, and withstand the effect of a physically demanding and punishing daily workload. The foot must be respected.

Foot hygiene and skin care

The skin on the sole of the foot is highly specialised and adapted to perform a number of important functions. To protect the foot against the stresses of standing, walking, running, twisting, turning, and landing from a height, the skin is much thicker than on any other part of the body. This thicker skin provides resilience against friction and localised trauma, and is relatively impermeable to water. The foot also has to receive many incoming sensory signals that help us to move and balance over a wide variety of surfaces, hard and soft, wet and dry. It is beneath the superficial outer layer of skin (the epidermis) and within the deeper layer (the dermis), that the vital blood and nerve supplies, hair follicles and sweat glands are found. In order to perform, the player must take great care of the skin overlying the deeper structures of his feet.

Within a human foot are some 250,000 sweat glands producing about 50 millilitres of sweat a day. Foot odour occurs when perspiration from the feet intermingles with the bacteria within boots or

Footballers use their arms for balance but it's their feet that takes most of the strain.

ELLIS/AFP/GETTY IMAGES

training shoes. The resulting mix (if not challenged) can lead to skin and nail complaints. The following measures can help to avoid this:

- nylon socks should be discouraged; alternatively, cotton socks should be worn underneath to absorb sweat, reduce friction and improve the comfort of footwear;
- clean socks should be used for every training session or match;
- non-slip shower 'sandals' should be worn in 'wet areas';
- feet should be washed daily with soap (carefully and quickly, no soaking) and rinsed thoroughly;
- skin should be dried gently and thoroughly (particularly the web spaces between the toes);
- foot powder may be applied;
- waiting a few minutes before putting shoes back on can be beneficial;
- try to avoid wearing the same footwear every day (it can take over 24 hours for shoes to dry out);
- sharing towels with other players should be discouraged.

Blisters

Blisters may occur at any site of friction between the skin and an external source. Typically, ill-fitting shoes, inappropriate footwear or poorly applied plasters, strapping or bandage are the main offenders. Blisters develop when superficial layers of skin separate and fill with serous fluid (sometimes blood); these may burst, leave a painful, raw exposed area and create a risk of infection. To help prevent or reduce blister formation the following may help:

- socks should be inspected for rough, worn, damaged areas;
- footwear of the correct 'last', width and length fitting must be worn;
- check the inner sole is intact; lift it to check that stud fixations are not sharp;
- studs should be of even height (level on a flat surface);
- laces must be tied with the right tension (the foot must not slide around inside the boot and impair stopping, starting and stability);
- new footwear must be introduced progressively (start with 20 minutes) and worn in training before use in a game;
- protective tape, skin-care pads or petroleum jelly (smeared over the sock) may be applied to potential sites of friction prior to training or playing;
- the most appropriate boot for surfaces or conditions must be worn.

Blister management is governed by whether or not the skin is broken. If unbroken, the area may be cleansed with an antiseptic solution. For training and match situations, a zinc oxide tape, a skin-care pad, or the application of a cotton-backed tape, followed by a foam pad with a hole cut to the size of the blister, may be applied. Fluid-filled blisters may be punctured and drained with a hypodermic needle and syringe, prior to the application of a protective dressing. If the skin is broken, the risk of infection will be heightened. The wound will need to be managed with the use of antiseptics and sterile dressings and monitored carefully. In all instances, players are advised to consult a qualified medical practitioner. Players should be advised that no clinical proof exists as to the effectiveness of soaking the feet in 'skin hardening' substances such as potassium permanganate.

KEYSTONE

Calluses and corns

Calluses and corns are a result of excessive friction and pressure creating areas of hard skin. Ill-fitting footwear, structural abnormalities within the foot or biomechanical abnormalities may predispose a player to these. Typically, a callus

EMPICS

has a thick, yellowish, oval appearance and is found underneath the forefoot and on the tips and tops of the toes, usually causing only mild discomfort.

Treatment involves identification and modification of the cause of the excessive friction and pressure. Hard skin may be treated by the use of moisturisers such as lanolin, or medicated discs and plasters, which can be purchased from a chemist. Trimming or paring of the skin by a chiropodist may be necessary. Should there be a biomechanical problem, the player should seek assistance from a physiotherapist or a podiatrist, who may need to construct an orthosis.

Corns have a very similar appearance to calluses. The essential difference is a well-defined, rounded appearance with a central core of hard skin, which often causes significant discomfort and is more tender when pinched.

Again, it is important to recognise and address what has led to the problem. Ointments, solutions, medicated plasters and pads can be used to help 'dissolve' the corn. Alternatively, protective foam, felt or gel pads with a hole cut in them similar to the size of the corn can be used. In severe instances, surgical removal may be performed by a qualified chiropodist or podiatrist.

Verrucae (plantar warts)

Verrucae are warts usually found on the sole of foot and caused by papovavirus. They are highly contagious and are contracted by contact with floors in 'wet areas' such as showers or swimming pools. They have a slightly raised, brown or white cauliflower-shaped head that may have small black dots in the centre, can occur singly or in groups, and may be painful on weight bearing.

Verrucae are self-limiting. They will eventually disappear when the body's immune system addresses the problem (usually four or five months). If they are painful, they can be tackled by medications from the chemist or be removed by a chiropodist through laser therapy, cryosurgery (freezing) or electrosurgery. To avoid contaminating fellow players, verrucae should always be covered.

Athlete's foot

Athlete's foot or 'Hong Kong Foot' (tinea pedis) is a fungal infection of the outer layer of the skin. The infection thrives in a warm, damp environment such as training shoes or football boots. Harmless, it is usually only a minor irritation to the skin on the bottom and sides of the foot and between the toes. Although it can become itchy and uncomfortable and cause large areas of the skin to become white, soggy, blistered, cracked and to peel. If untreated, the infection can be transmitted to other players, particularly if they walk barefoot in 'wet areas'.

Treatment typically involves the use of anti-fungal preparations which come in spray, powder or cream form. Signs and symptoms


EMPICS/BUZZI

Young players have to take great care of their feet.

will often disappear within three days, however, treatment should continue for a full 21 days to completely eradicate the infection. Training shoes, boots and socks also need to be treated to ensure the fungus is eradicated and the foot is not re-infected. The wearing of well-ventilated footwear when not playing or training is advisable.

Problem toenails

The most common complaints involving the toenails are the ingrown toenail (onychocryptosis) and 'runner's toe'/'black nail' (subungual haematoma).

The ingrown toenail occurs as a result of poor nail cutting, abnormal nail growth, trauma to the nail or abnormal shoe pressure. The sharp, ragged edge of the growing nail, usually the first toe, pierces the adjacent skin causing acute pain, redness, swelling, a possible discharge between the side of the nail and the skin (infection), and tenderness on gentle palpation. To avoid this, toenails should not be cut too short, or rounded, but be cut square, or with very slight rounding following the contour of the toe and left long enough to cover the nail pulp. For infected cases, antibiotics may be required. In instances of recurring injury and infection, removal of the nail may be indicated.

'Runner's toe' is a condition where shearing of the nail causes bleeding under the toenail and usually results in the nail turning black. It occurs when a shoe or boot is too tight or where the foot slides forward in a shoe and jams the end of the toenail against the end of the shoe (particularly on artificial surfaces). Alternatively, a direct blow or crushing of the toe may cause an immediate bruise beneath the nail; this may be painful due to the increased pressure in the area, which may be relieved by perforating the nail, but this procedure should only be performed by a medical practitioner. The nail may eventually die, grow out and drop off but should be preserved for as long as possible to serve as a 'biological dressing' to protect the new nail growing underneath.

It is important to note that with any infection of the feet there may be an associated pain and tenderness in the inguinal region; this is due to the lymphatic drainage system within the limb and the lymph nodes that are situated in this area.

Foot-note

To maximise their participation in football-related activities, a player must take care of their feet. In conjunction with appropriate footwear selection and high standards of personal hygiene, minimal disruption to participation will be achieved if players are encouraged to report any symptoms or signs at the first opportunity. It is prudent for every player, particularly youth players, to have a six-monthly foot examination. A proactive, pre-season presentation from a podiatrist or physiotherapist may have considerable benefits for the football club's playing personnel and those who would ultimately have to manage any foot problems.

CARING ABOUT FOOTBALL PLAYERS

By Alan Hodson, MA, Head of The Football Association's Medicine & Exercise Science Department

As Dr Urs Vogel, chairman of UEFA's Medical Committee, mentions in his editorial, medical care is not just about the high-profile cases at the peak of the footballing pyramid. Alan Hodson, one of his colleagues on the committee, presents a case history based on the structures he has helped to build in English football.

As long ago as 1990, The Football Association recognised the need to devise and launch a specific educational training programme at all levels of the game in order to enhance and safeguard the medical welfare of all affiliated players, ranging from amateur to professional levels and age groups from the youngest to the veterans.

It was easier said than done in a footballing nation of over 43,000 affiliated clubs, over 70,000 teams and some 2,500,000 registered players.

Medical education structures therefore had to mirror the wide-ranging nature of the footballing 'workforce'. Educational training courses were therefore divided into three broad categories:

- Emergency and first aid courses
- Treatment and injury management courses
- Exercise science courses

The leitmotiv of the courses is to train medical and exercise support staff ranging from emergency and first aiders through to therapists and exercise scientists to fitness trainers fully equipped to operate at the top levels of the professional game. Medical education courses are structured on five levels:

LEVEL	COURSE	CHARACTERISTICS
1	Emergency Aid	Three-hour basic course
2	First Aid for Sport	Minimum duration of 14 hours
3	Level 2 Certificate: Treatment & Management of Injury in Football	Minimum duration of 21 hours; syllabus and assessment procedures designed to maximise student learning
4	Level 3 Certificate: Treatment & Management of Injury in Football	Minimum duration of 36 hours; syllabus and assessment procedures designed to maximise student learning
5	Diploma: Treatment & Management of Injury in Football	Two-year course with increased contact hours in residential modules and additional in-course projects

The Level 1 course is a one-evening session for a group of 10-12 students with the emphasis fair and square on resuscitation and life-saving skills.

The Level 2 course is specifically designed to meet the needs of a first-aider working in football, no matter whether they are classed as 'manager', 'coach', 'trainer' or 'therapist' at amateur or youth clubs. Participants gain knowledge and skills in basic anatomy, traumatic injuries that require first aid, injury identification and medical conditions that can affect players. There is a minimum of 14 hours of teacher-pupil contact plus a minimum of seven hours of guided learning/home study.

The Level 3 course is designed for the same sort of target group with additional emphasis on the reaction to and repair of injury, signs and symptoms of commonly-found injuries, injury prevention, plus basic treatment skills and management advice for the injured player. It involves a minimum of 20 contact hours plus a recommended 30 hours of pre-course and in-course home study.

Level 4 is for students who wish to build on the foundations of one of the more basic courses. It offers further training related to specific upper- and lower-limb injuries, recognition and assessment of injuries, plus treatment and manage-

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ment of injured players, including exercise therapy, foot care, treatment modalities, injury management advice, and fitness training principles. The parameters here are 36 contact hours plus 20-30 hours of pre-course and in-course study.

Level 5 is an advanced course designed to build even further on previous courses. The additional elements include fitness training, fitness assessment, physiology of exercise, plus the pathology and assessment of a wide range of football injuries. The two-year course is divided into two parts, with 120 contact hours in each plus tasks and assignments during residential modules and comprehensive distance learning. The resulting FA diploma is a recognised requisite for those aiming to work in professional football.

When the FA's Medical Education Centre became the FA Medical and Exercise Science Department in 1999, three additional courses were added to the 'menu' with a view to equipping amateur and professional club personnel with specific skills in fitness and conditioning training:

- Physiology for football
- Weight resistance training course
- Fitness trainer's award

The physiology course focuses on relevant exercise physiology, bodily responses to exercise and the demands of football. Specific attention is paid to the application of basic training principles and practical strategies for preparation and recovery. The course also focuses on the conditioning needs of children and adolescents, along with the nutritional requirements of all players. The syllabus therefore includes topics such as physiological responses to warm-up and cool-down sessions and physical strategies to assist performance and delay fatigue.

The weight resistance course aims to provide students with an understanding of strength-training theory, including the musculo-skeletal adaptations that occur in response to weight training. Emphasis is placed on gaining knowledge of how to plan, conduct and evaluate weight-training sessions for the development of muscular strength and endurance.

The Fitness trainer's course spans a two-year period and entails about 650 hours, 130 of which are dedicated to practical work and 120 a year to distance-learning. Residential modules account for 80 hours a year. In addition, students undertake on a specific project assignment during their first year. Students must have a sports degree and must have the Treatment & Management of Injury diploma. The syllabus includes elements such as motor control, kinesiology and biomechanics, growth and development, the demands of the game, application of power/plyometrics to football, and injury prevention, along with specific components dedicated to women's football, legal and safety issues, and psychological aspects such as motivation and target-setting. In 2005, over 41,000 people attended the FA's medical and exercise science courses. This evidently requires a substantial infrastructure, so The FA recruits and trains tutors and assessors – over 1,000 of them. To support the courses, The FA stages three annual medical conferences at different levels, for orthopaedic surgeons, haematologists, sport medicine doctors, club doctors, chartered physiotherapists and therapists/first-aiders working in amateur and professional football. Two other annual conferences are organised for exercise scientists, fitness trainers and coaches attached to professional and amateur clubs. Each year, the conferences are attended by over 1,000 people.

First aid is the subject of the Level 2 course.

The initial 'mission aim' of this educational structure was "to devise and implement a comprehensive medical and exercise science educational programme aimed at protecting and enhancing the medical welfare of players of all ages and ability, for able-bodied and disabled players of both sexes". The success of The FA courses demonstrates that the mission is being effectively completed.

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