

Editorials

Warm up

The 1995-96 rugby season left us with images of foul play and injury on the pitch and during the summer we had allegations of foul play off the pitch. Money has had a major effect on rugby. Talk of television contracts and huge salaries paid to players have heralded the accelerated professionalism of the sport and the entire character of the game is likely to change. The law has also made a dramatic entrance and Edward Grayson emphasises that the law of the land, civil and criminal, does not stop at the touch line and that doctors and lawyers should work together to eliminate deliberate violent foul play. Parents and players will also be especially interested in the study of injuries in school and senior club rugby.

The centenary Olympics were notable for the tremendous achievements of women and the huge increase in women participants, even from countries where this may have been culturally unacceptable in the past. The next cohort of Olympians will already be training for Sydney, but among women athletes and coaches is a new awareness of the hazards of low body weight, amenorrhoea, and osteoporosis. In this issue we publish a randomised controlled trial in osteoporosis and an editorial on the same theme. Coincidentally we publish a paper exploring the effect of altered reproductive function and lowered testosterone on bone density on male endurance athletes.

Royalty, Royal Colleges, purple prose or progress

Our colleagues at the Institute of Sports Medicine are to be congratulated on hosting one of the most important events in British sports medicine. At a lecture and dinner in St James Palace, in the presence of HRH The Prince Philip, Duke of Edinburgh, on the occasion of the first award by the Institute of The Prince Philip Medal in Sports Medicine to Professor Archie Young, Dr Dame Fiona Caldicott gave an address which will have major implications for the future of sports medicine in the British Isles. She announced the establishment of a Board of Sport and Exercise Medicine.

The context of this statement is as important as its content. Dr Dame Fiona Caldicott is the chairperson of the Academy of Medical Royal Colleges, which is comprised of the Presidents of the medical Royal Colleges and their faculties. The Academy had formed an intercollegiate steering group for sports and exercise medicine to establish principles upon which a Board of Sports and Exercise Medicine might be founded. They submitted a proposal, which was accepted, and a small working group has been formed which will be chaired by Dr John Brindle, president of the Royal College of Radiologists. This announcement was made in the presence of the Presidents of the Royal Colleges, senior politicians and representatives of medical schools.

The steering group defined sport and exercise medicine as a clinical discipline and stated objectives in education and research. More importantly it stated how those objectives should be achieved. This will be through the award of recognised diplomas to two levels of medical graduates who have completed an approved course of training and passed the appropriate examinations. These would be (1) a diploma based on a minimum of two years approved training in sports medicine as well as having passed the diploma examination, and (2) a higher award, recognising those who had completed approved higher specialist training leading to the award of a certificate of specialist training (CCST). The higher award would also be available to those general practitioners who had completed equivalent additional training.

Those with an interest in the future development of sports medicine as an academic discipline will welcome this initiative enthusiastically. The future is bright, and those medical students who wish to follow sports medicine as a career may now be given much more positive advice. But there are many challenges, many obstacles to be overcome, and many problems to be solved. The Academy of Medical Royal Colleges has taken the initiative, but those of us who are already involved in sports medicine must play our part.

The sports medicine family has had its own share of domestic disagreements. It is time to put these behind us and work together towards the greater good. We in the British Association of Sport and Medicine (BASM), the National Sports Medicine Institute (NSMI), and the Institute of Sports Medicine all have a very important role but we must cooperate while recognising the aims and aspirations of each organisation. In particular we must all pull together in harmony with the working group.

To BASM there is a particular challenge, and members may see this initiative as both an opportunity and a threat. It is clear that the future development of academic sports medicine will be through the established Royal Colleges and thus will be medicine based, yet BASM is a multidisciplinary organisation. No medical Royal College has non-medical members, although the Faculty of Public Health has recently been grappling with this issue. We must come to terms with what this will mean to our membership. Doctors will be delighted with the establishment of a medical specialty but colleagues in other disciplines may not be so enthusiastic. One of the strengths of BASM has been the opportunity for all disciplines to learn from each other, which is particularly important in sports and exercise medicine, and we may need to explore how we can continue to do so and yet contribute most to the future developments within the Royal Colleges.

This initiative also brings responsibilities. Sports Medicine will no longer be a hobby in which medical ex-athletes can dabble for fun. Practitioners will have to

conform to the rules, regulations and expectations associated with membership of any academic body. This means a commitment to professional excellence, research, audit, peer review and examination. It may mean

that some of those who have contributed most to the development so far may not be able to reap the long term benefits.

DOMHNALL MACAULEY

Osteoporosis and exercise

Osteoporosis is a systemic skeletal disease characterised by low bone mass and microarchitectural deterioration of bone tissue with a consequent increase in bone fragility and susceptibility to fracture. It affects approximately 30% of women over the age of 50 and is a major health problem worldwide. It is increasing due to prolonged life expectancy and altered lifestyle. Fractures of the hip are associated with the highest mortality and morbidity. Twenty five per cent of those who have a hip fracture die within six months and 50% are incapacitated. The risk of developing a fragility fracture depends on the amount and strength of bone, and the rate at which bone is lost, and on falls. In women the major cause of bone loss and osteoporosis is oestrogen withdrawal. Hypogonadism is also a factor in male osteoporosis. Oestrogen increases trabecular bone, while testosterone affects cortical bone. Osteoporosis is a preventable disease. A large bone mass early in life protects against osteoporosis.

Bone is a living tissue that is continuously being turned over or remodelled during a cycle of resorption and bone formation which takes approximately 13 weeks. The rate of turnover is determined by hormonal and local factors. The turnover of trabecular bone is much greater and osteoporosis is more marked in trabecular bone, which is affected earlier than cortical bone.

Peak bone mass is generally achieved in early adulthood, being determined by sex, heredity, race, diet, exercise, and hormones. In females 50% of the bone mass is due to prepubertal growth, but only 10% in males. Physical activity is an important factor in determining peak bone mass but one must distinguish between the different forms of physical activity—weight bearing and non-weight-bearing.

The effect of exercise on bone mass is site specific. If the exercise involves mainly the lower limb, it may improve femoral neck bone density, but have no effect on the radius. It is essential to examine the specific region of interest, for example the neck of the femur and the lumbar spine, if you wish to determine the level of bone mineral density.

Physically active people have higher bone mineral densities than age matched controls. A meta-analysis of six trials showed that exercise reduced the incidence of hip fractures by 50%. Skeletal fragility in the elderly can be traced to low peak bone mass attained during childhood and one of the factors is the level of physical activity undertaken during the developing years.

There is a relation between bone mass and activity. Women with osteoporotic fractures have a lower muscle mass and strength than age matched controls. Extremes of exercise, too little or excessive, both result in bone loss. Long periods of oestrogen deficiency during the early decades affect peak bone mass. Eating disorders such as anorexia nervosa, bulimia, excessive exercise induced amenorrhoea, or excessive psychological stress and high levels of prolactin may all result in low oestrogen concentrations, resulting in an increased incidence of stress fractures and even osteoporosis in young females.

There has been an increase in eating disorders, particularly in the so called feminine sports such as gymnastics, synchronised swimming, ballet dancing, and weight category sports (light weight rowers). The combination of amenorrhoea, eating disorder, and osteoporosis is now known as the athletic triad. Unless patients are treated when they are young they will have major problems in later life.

Lack of physical activity is a risk factor for osteoporotic fractures. Immobilisation and prolonged bed rest produce a rapid bone loss, while exercise involving weight bearing has been shown to reduce bone loss and to increase bone mass. The optimal type and amount of physical activity that will prevent osteoporosis have not been established.

To increase bone mass and strength, exercise should involve loads of high magnitude and rate and should be dynamic in nature, with varied and diverse patterns of stress. Relatively few cycles of loading would be required so you do not have to exercise for long periods. It is very important to cross train and not rely on one exercise for both cardiovascular and osteoporosis prevention. The exercise must be enjoyable, as it will only be of benefit if it is continued and is a programme for life. Poor compliance is a major problem. Strategies to prevent falls are important. Exercise in elderly people may enhance mobility, muscle strength, and co-ordination.

The combination of exercise, calcium supplements, and hormone replacement therapy is the optimum treatment to prevent bone loss.

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Medicolegal aspects of deliberate foul play in rugby union

Medico-legal principles, which have a common denominator, are applicable to all contact body sports, and particularly soccer, cricket, and rugby union. These principles are all interrelated, with a common thread protecting the doctor's patient, the lawyer's client, and the

particular sport itself. These principles uphold the following. (1) The rule of law on the field of play should reflect the wider law, which never stops at the boundary or touchline. (2) The spirit of the game, identified as a Corinthian ethic of fair play, runs throughout. (3) The