overcome them where possible.

3. It is not a fitness Council and seeks to promote sport as a natural, worthwhile and enjoyable form of human expression which eminently deserves support in its own right and for its own sake.

4. It has not assumed any responsibility in the ‘pure science’ aspects of physiology or biomedicine; the M.R.C. and the S.R.C. exist to fund work in these areas. Nor is it the Sports Council’s role to be concerned with the training of doctors, physiologists, sports medicine specialists and researchers.

Conclusion

The Sports Council is concerned to promote sport for all those who wish to take part by encouraging the provision of an irresistible choice of sports activities.

It is also concerned to raise standards of performance by helping to provide increased opportunities for talented sportsmen and women to realise their full potential.

The Sport for All Campaign is directed at these two targets — to increase participation and to develop excellence in sport.

SOME ACADEMIC ASPECTS

a. Scientific —

Professor J. E. KANE (Principal, Loughborough College of Education and Professor of Human Movement Studies, University of Loughborough)

b. Medical —

Dr. P. J. R. NICHOLS (Postgraduate Adviser in Medical Rehabilitation to the Royal College of Physicians)

The new Diploma in Medical Rehabilitation

Dr. D. R. L. NEWTON (Chairman, Specialist Advisory Committee on Rheumatology of the Joint Committee on Higher Medical Training)

Consultant Training

J. E. KANE, Ph.D., M.A., D.L.C.

Principal, Loughborough College of Education
Professor of Human Movement Studies, University of Loughborough

It is probably not very useful to dwell overlong in a symposium of this sort on the possible reasons for, or implications of, the distinction between the two headings ‘scientific’ and ‘medical’ set down in the programme. The distinction made by intention or default, is thoroughly welcomed by myself and, I am sure, by many of my colleagues, as an opportunity for strengthening the lines of communication between the medical and the non-medical contributions to sports science. There is, as you know, difference of opinion as to how the term ‘sports medicine’ may be interpreted — whether as Jokl (1968) would have it as ‘a branch of clinical medicine’ (supported by four disciplines, Applied Physiology, Clinical Medicine, Traumatology and Rehabilitation) controlled by physicians, or more widely as suggested by the objectives of our parent body, the Fédération Internationale de Médecine Sportive (F.I.M.S.) which were set down at its inauguration in 1928 as:

1. To initiate scientific research on biology, psychology and sociology in their relation to sport.

2. To promote the study of medical problems encountered in physical exercise and in sport.

3. To organise international congresses to be held simultaneously with the Olympic Games.

Equivocation is noticeable also in the titles of the relevant journals. The official publication of F.I.M.S. is called the Journal of Sports Medicine and Physical Fitness suggesting a special kind of mixture, whereas another equally reputable international journal is entitled Medicine and Science in Sports, presumably intended to identify the two main interacting elements in sports science. And it can hardly have escaped your notice that while we are the British Association of Sport and Medicine we nurture in our nest a cuckoo known as the Journal of Sports Medicine.

Even a cursory checking through the journals mentioned reveals the way in which sports medicine is defined operationally. Contributions from physicians and experts in applied physiology, traumatology and
rehabilitation are juxtaposed with those from biophysics, biochemistry and engineering — and all with a focus on sport. More recently sports medicine journals and, even more obviously, conference programmes have shown a partiality for including papers with a psychological or socio-psychological emphasis and, indeed, it is possible now to come across papers with an explicit educational slant. And this is as it should be. If the focus is sport then the most open-minded interdisciplinary approach to the understanding of processes and the resolution of problems will surely lead to the most rewarding and enlightened outcomes. In this connection the emergence of Biomechanics as an area of science is of significance since “it comprehends knowledge of the interplay of mechanical forces underlying all human movement, their autonomic support, neurological initiation, integrated control, perceptual accompaniment as well as their central design” (Wartenweiler 1968). In the analysis of motor acts the biomechanical approach makes use (often simultaneously) of techniques and concept from physics (for the assessment of mechanical, thermic and electrical components), from anatomy (for the analysis of morphological prerequisites), from physiology (for the identification of functional parameters), and from psychology (for the consideration of the mental processes involved in the initiation, design control and perceptual interpretation of movement. The applicability of human movement analyses so comprehensively undertaken is, of course, not limited to sport but applies to industry, the creative arts and assuredly to medicine and particularly to medical rehabilitation. The potential value of the interdisciplinary approach may be simply illustrated from the analysis of Louis Martin’s weight-lifting undertaken a few years’ ago in Loughborough University (Corser, Hamley, et al., 1968). These workers used electromyographic and synchronised cinephotography to investigate the problem which they identified as “the activity involved in heavy weight-lifting tasks prevents problems of skill as well as cardiac tolerance. Analysis of this skill is difficult in cases where the load is very great as the duration of the lift may frequently be determined by the need to prevent injury or too great compression of the thorax”. The analysis of the traces permitted interpretations concerning the changes in cardiac function, the identification of periods of high intrathoracic pressure and the identification of spinal stress areas where injury is likely to occur. There are other examples, too numerous to illustrate here, of the way in which the treatment and prevention of injury has been shaped by the findings from appropriate biomechanical analyses which more often, of course, have as their starting point, a skill-based problem, posing questions of efficiency or effectiveness.

The identification of sport as a proper and rewarding area of investigation susceptible to scientific rigor is recent. In 1964 the Olympic Conference in Tokyo was organised under the title of Sports Sciences and the more recent Munich conference took the same title and included sections not only for biomechanics, work physiology and medicine but also for philosophy, psychology, sociology — and there was even a section, which incidentally was very well attended, for sports education and the sports curriculum. Nearer home the terms ‘sports science’ and ‘sports sciences’ have gained increasing currency. Loughborough University of Technology will offer a substantial and multidisciplinary option in sports science within the undergraduate modules from next session — and the C.N.A.A. are currently considering the validation of a similar type of B.Sc. course at Liverpool Polytechnic — and, indeed, there are other institutions offering, or intending to offer, courses with a focus on the scientific analysis of sport under larger banners such as Human Performance, Movement Studies and Human Sciences. Such courses tend to include, in addition to aspects of biomechanics, differentially emphasised units of study which give prominence to psychological and sociological interpretations of sport involvement and sport performance. Such an academic development is now possible due to the development of interest and research in sports psychology and sports sociology. The time available to me in this short paper prevents me from going into any detail on sport sociology but I should like to allocate the rest of my time to a consideration of sport psychology as a challenging and exciting area of sports science which has certainly some direct medical implications.

The International Society of Sports Psychology, which was founded in 1964, has now had four major international conferences, many more continental meetings across the world and has given birth to some 87 national societies. As a result, book and papers on this topic have recently proliferated to such an extent that there is no hesitation even in British Universities to acknowledge the presence of suitable academic resources to sustain taught courses to M.A./M.Sc. level and to accept topics in this area for research degree purposes. To make a little clearer the possible contribution of a psychology of sport, I feel I should take the opportunity of quoting — appropriately I think for the purposes of this symposium — my own contribution to the current Handbook of Medical Psychology.

“Sports Psychology may then be regarded as an area of study which is concerned with the application of psychological knowledge to learning performance and associated behaviour in the context of man’s physical activities, his games, play, dance and sporting involvement. It has its foundations, therefore, in many areas of psychology and psychiatry from where it seeks meaning, interpretation and understanding. The main areas of psychology which appear to be most interesting and rewarding to the sports psychologist might seem to
be, for example, learning, motivation, perception, personality, mental health and social psychology."

At the last F.I.M.S. world conference in Melbourne a section was devoted, for the first time I believe in the history of sports medicine conferences, to psychological aspects. I was personally delighted and honoured to be invited to contribute to this session, which was co-ordinated by Professor A. F. Welford, known to many of you I am sure as one of the world’s leading experimental psychologists. In making this gesture, which, incidentally, was an enormous success, F.I.M.S. would seem to have acknowledged the growing need for cross-disciplinary investment and, at the same time, gave meaning to its stated objectives, referred to earlier, of the greatest interest and potential usefulness are the current psychological studies of psychic or mental states of athletes before, during and after competitive performance. At the recent European Psychosomatic Research conference in Edinburgh the present chairman of the International Society of Sports Psychology, Professor Miroslav Vanek (1974) was asked to outline some of the current procedures being used successfully for the optimalisation of the athletes psychic states as:

1. programming of performance
2. manipulating the athletes' responsibilities
3. utilising various verbalising approaches
4. planning appropriate complementary activities
5. idomotor training
6. autogenic training
7. hypnosis
8. desensitization procedures.

My purpose in this short communication has been to outline some of the possibilities in a science of sports and to emphasise the way in which the narrower interpretation of sports medicine might well be elaborated to take cognisance of possibilities in the broader scientific analysis of sport. Nothing but good can come from such an elaboration according to which the medical interpretations can be served and enlightened by scientific insights and only taken together can the medical and scientific give the full perspective against which philosophical and educational judgments may be made for the involvement and performance in sport of the average, as well as the elite, children as well as adults. Only with the fullest knowledge can rational judgments be made on decisions which may affect the physical and mental well-being in a society markedly calling for comprehensive programmes of physical education for children and for Sports for All.

Parenthetically I should add that the logic of what I have said would tempt me to recommend a change in the title of the B.A.S.M. or its journal or both. But I willingly resist the temptation.

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J. E. Kane

doi: 10.1136/bjsm.9.1.29

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