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Why sports injury clinics?

Sport is a ritualised form of war, a competitive activity in which dominance by force is the objective. It shares with warfare the skirmishes, pitched battles, the wounded, and even the dead. Fitness and health are, by contrast, non-competitive and individual. One result of health education has been to blur, particularly for the active young, the distinction between fitness and health, and the ability to play sport. Two unfortunate ideas have followed: firstly, that you cannot be fit unless you play sport; secondly, that the way to become fit and healthy is to play sport.

Our recent review in Bristol showed that only 3% of local sports people are of regional or national class—the remainder play at club level or below. A quarter of those playing sport did so more than once a week, and, although a quarter of those playing sport get into condition to play sport, the remaining three quarters play sport to keep fit. It is of little surprise therefore that about one in 10 of the sporting population are injured every year (H E Robson and J G P Williams, communication to the British Association of Sports Medicine, 1961). Between 2.5% and 10% of attendances at accident and emergency clinics follow acute sport injuries (P G Stableforth, unpublished observations).^{1,3}

Sports people suffering acute injury rarely become dependent on others for activities of daily living, but we have found locally that one in two is in full time employment and that three out of four of these workers is losing on average 10 days from work. This fits with other studies and shows the need for prompt and effective treatment.^{2,3} To provide a specialist service nationally has been shown to be expensive,⁴ but a few patients do need immediate care by a sports injury specialist because of their calibre, their job, or the uniqueness of their lesion. Four fifths of the patients, however, have injuries identical to those sustained after home, road, or work accidents and require the same management. The perceived deficiencies in the care of those injured by sport⁵ should thus be a spur to improving general trauma care and providing injury prevention, counselling, and rehabilitation services. They should not be used as a justification for fragmenting care.

Those injured by sport may also present with chronic or relapsing musculoskeletal disorders that interfere only with their chosen sport, or with problems unique to particular training regimens or sporting activities. These patients may find general practitioners impatient when simple remedies fail, casualty officers too inexperienced, and hospital seniors dismissive. For this group clinics run by interested specialists have been shown to be effective. They lessen the number of conflicting diagnoses offered by the many "experts" who pack the dressing rooms of sports clubs.^{2,5,6} These patients deserve a specialist service that will give them accurate diagnosis and specialist treatment and advise on reconditioning, retraining in motor skills, and when to return to the sport.^{3,5,7} This national network of

interested doctors should advise sports people not only on sports injuries but also on general health and nutrition, training regimens, and sport programmes. They would be best able to advise people that the time has come to stop their sport altogether if progressive harm is to be avoided.

Who should offer this advice? Commitment to sports people and a thorough training in sports medicine are much more important than the holding of any particular post: general practitioners, surgical trainees, clinical assistants, and consultants in rheumatology and orthopaedics are already working in this discipline. Their primary requirements are time and access to well staffed diagnostic and treatment facilities. Those who are not working in specialised rehabilitation units or in hospital need the support of colleagues who do for referral of patients. The hospital based specialists should provide the academic background and should spread the new ideas and the proved methods of treatment that are necessary for the sports injury service to thrive.

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Understanding the causes of diseases

Epidemiological methods are used to indicate whether exposure to this or that is (or is not) implicated in the aetiology of this or that disease. Students of the published work in epidemiology will be aware that for some disease associations there is much more controversy than for others. This is not surprising because defining the cause from observational data, with all their opportunities for selection and bias, will rarely be straightforward.

Classic epidemiological method has therefore rightly emphasised the dangers of confounding in interpreting observed disease associations. Hence, though the chance of having a baby with Down's syndrome is unambiguously associated with parity, in that on average women of high parity have a much higher risk than those of low parity, it becomes immediately clear on standardisation for maternal age that parity itself has nothing to do with the risk. Similarly, in all other comparisons of incidence with time, place, and any other interesting characterisation of groups of people it is necessary to standardise for age at least. All diseases have some relation between incidence and age, and comparing rates of any disease between elderly and middle aged people is rarely interesting from an aetiological point of view, except to illustrate this age association.

Hence most comparisons of the incidence of disease are made after age standardisation. Typically this means comparing standardised mortality or morbidity ratios, which are summary statistics using indirect age (and sex)

standardisation. They have the advantage of enabling the mortality or incidence of a disease to be compared between groups with different age structures but they allow for the effect that this difference will have on the comparison. Nevertheless, these ratios also have the disadvantage common to all summary statistics: they may conceal subtle, but possibly important, differences in the relation of the rates with age itself.

An example discussed recently is the comparison of the male standardised mortality ratio for two diseases in different counties in England and Wales and in different groups classified by their smoking habit (R West, unpublished data).¹ For lung cancer and ischaemic heart disease there is a familiar association of high (age standardised) death rates with high consumption of cigarettes. Nevertheless, the pattern of death rates by age according to the amount smoked is obviously different. For lung cancer there is an increasing divergence as age increases, in contrast to ischaemic heart disease, for which the age specific mortality appears merely to be displaced horizontally (figure). Thus the author, West, seeks to distinguish between a genuinely higher risk of death at a given age and merely a reduction in the average age of death, which will, of course, look like a higher age specific risk if the disease is associated with an increasing risk with age.

The point of this distinction becomes clearer when West compares the age specific risk of death from *all causes* with whether the subjects smoked or not. These graphs resemble those for ischaemic heart disease, not those for lung cancer. Since all men eventually die the interpretation then cannot be that smoking causes more deaths than not smoking but that, on average, smoking brings forward the age of death. Similarly, therefore, does smoking merely bring forward the age of death from ischaemic heart disease? In contrast, smoking genuinely does cause many more deaths from lung cancer than occur among non-smokers.

The argument is made more cogent when comparisons of mortality are attempted between the counties of England and Wales. Those counties with highest standardised mortality ratios for ischaemic heart disease are not necessarily those in which the age standardised proportions of all deaths from ischaemic heart disease are highest. Indeed, comparing the counties with the highest standardised mortality ratios with the ones with the lowest suggests that the proportions of all deaths from ischaemic heart disease at ages above about 50 are similar.

Variation in mortality from lung cancer and ischaemic heart disease with age in smokers and non-smokers.

This is pertinent because in epidemiology we tend to treat all diseases similarly. Thus a relatively high age standardised rate of one disease among a group of people will tend to trigger a search for a risk factor to which this group is particularly exposed. But in this example spotting a high standardised mortality ratio for lung cancer would mean that an epidemiologist stood more chance of finding the risk factor than spotting a high standardised mortality ratio for ischaemic heart disease—because the high standardised mortality ratio for lung cancer reflects more deaths relative to the whole country, whereas the high standardised mortality ratio for ischaemic heart disease may reflect only earlier deaths. Thus for lung cancer a raised standardised mortality ratio could reflect exposure to a risk factor, whereas the equally high standardised mortality ratio for ischaemic heart disease may not.

Thus West makes important distinctions for interpreting high (or low) standardised death (or incidence) rates for particular diseases. Firstly, do they reflect more deaths or merely the same lifetime risk of death brought forward? To make this distinction clearer the researcher must look at all cause mortality. Since everybody dies, differences in overall death rates can only mean younger deaths. If, secondly, the proportion of cause specific deaths of all deaths remains roughly constant then looking for a particular risk factor may be futile despite a raised cause specific standardised mortality ratio. This is because the particular cause of death may be merely one reflection of earlier deaths in general that may be a consequence of many factors.

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Back calculation of blood alcohol concentration

In July Lord Justice Watkins ruled that it was legally permissible to back calculate to the time of an accident the blood alcohol concentrations in motorists suspected of drink-driving offences. His judgment was that the law places no restriction on the method of establishing the blood alcohol concentration, but he did express caution as to its practicability. Dr John Havard, secretary of the BMA, has described the procedure as unscientific, and some consider that a calculation based on a single sample is scientifically unacceptable.

Scientific predictions are made in terms of probability, calculated by statistical procedures, and based on multiple measurements to take account of biological variation. The law functions similarly, dealing in terms of "reasonable doubt," and so, unusual circumstances apart, back calculation could prove acceptable.

Alcohol disappears from the blood in a (pseudo) linear manner.¹ Not only, however, is there biological variability in the rate of decline of the blood alcohol concentration among individuals and on different occasions but also the rate varies considerably with the dose of alcohol.^{2,4} Studies have provided upper and lower limits for the rate of decline in different sorts of drinkers: social drinkers 19 and 11 mg/100 ml/h, non-