MARATHON MEDICINE AND INTRODUCTION

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This edition of the BJSM is devoted to medical and physiological aspects of marathon running. Following the very successful Sports Council and Health Education Council sponsored symposium at Lilleshall on "Exercise, Health and Medicine" in May 1983 I suggested to the Fitness and Health Advisory Group of the Sports Council that a symposium on "Marathon Medicine" would be a useful sequel. As Medical Director of the London Marathon I had been bombarded with letters from doctors requiring advice on the medical aspects of marathon running and the facilities required at these events and I thought that it was an opportune time to bring a group of experts together to make recommendations on race medical support and exchange information on some of the physiological and medical aspects of long distance running. This suggestion was taken up with enthusiasm by Professor Jerry Morris and the other members of the group and the conference was held with additional support from the Health Education Council in February 1984 at Bisham. The conference was organised with the object of bringing together physiologists, physicians, and those most involved with marathon events, St. John, the Red Cross, physiotherapists and podiatrists, to discuss the associated medical problems, their causes, prevention and treatment. Not surprisingly many of the participants were runners themselves.

The recommendations of this conference have been published already in the British Medical Journal (4th May, 1984) but for the convenience of our readers the editor of the BMJ has kindly given the BJSM permission to reprint these recommendations which include an advice sheet for runners modelled on that sent to all entrants to the London Marathon, and very widely copied, and an advice sheet for first aiders. The participants at the Bisham Conference were kept to a small number of people directly involved. Unfortunately not all the speakers at the Bisham Conference felt able to contribute a paper to these proceedings and Professor Brian Williams had his paper on "Medical arrangements in 108 open entry British marathons, 1983", published in Health Trends, August 1984, No. 3, Vol. 16. We have therefore solicited some additional material which was not presented at Bisham and included one or two papers already submitted for publication which were relevant to the main topic.

THE MARATHON RUNNING BOOM

The boom in marathon running in Great Britain has followed that in the USA. When the first London Marathon was run in 1981 there were probably not many more than a thousand British runners who had run a marathon. Most fields for the traditional marathon event had been of 20 to 100 experienced club runners and in 1975 there were only 14 full course marathons run in Great Britain. The boom in running and in particular marathon running has occurred despite rather than because of any of the official organisations catering for sport in Great Britain. Most of the running neophytes have been unattached to running clubs and not necessarily in close contact with experienced runners or coaches. The effect of the London Marathon has been enormous and pivotal. In 1982 there were 110 full course marathons in Great Britain and the number has now plateaued at about 150. The number of joggers as well as marathon runners has increased phenomenally and now probably there are as many joggers as anglers (2,000,000) in the country. As a runner for thirty years I had become used to solitary runs never passing another runner but just occasionally seeing groups of boxers or footballers out for a training run. Now I frequently see runners in rural Suffolk, along the tow path of the Regents Park canal in East London (although still heavily outnumbered by chain smoking anglers), and in the evening rush hour along the Westminster embankment. The number of running events has now probably reached saturation point, but the average number of competitors continues to rise, with average fields of about 1,000 for all British marathons in 1983 (ref. Williams) and the London Marathon accepting entries of 20,000 and the Great North Run even more. With the increase in runners has come a higher level of expectation for facilities and support at races, not least medical support and it is the races that are well organised and well supported logistically that are continuing to attract larger and larger entries and the poorly organised ones that are being avoided.

WOMEN RUNNERS

In the last year or two more and more women have been taking up jogging, encouraged by "Running" magazine and more recently by "Womans Own" and the percentage of women in marathon races in Britain is beginning to

climb towards the American figure. It therefore seemed appropriate to invite a paper on . . .

ATHLETES AMENORRHOEA AND BONE DISEASE

We are particularly grateful to Professor McArthur for a review paper on amenorrhoea and its possible relationship to osteoporosis in female athletes. A lot has been written about the benefits of running and even its effect in increasing bone density. However there are now some worrying reports that women runners with amenorrhoea may suffer loss of bone density and be predisposed to fatigue fractures. This complex issue is reviewed by Professor McArthur. Despite this review article readers may be interested to know that the commonest reason for withdrawal from the 1984 London Marathon in the three months before the final three weeks was pregnancy. The number of women withdrawing for this reason far outnumbered the total numbers of either sex withdrawing for any other medical reason. Obviously not all the women are losing their fertility or are totally obsessed with their training and they appear not too fatigued for other activities. Professor McArthur is visiting from Boston and is continuing her work on this problem at St. Bartholomew's Hospital.

MUSCLE DAMAGE

The marathon distance of just over 26 miles or 42 kilometres is perhaps just a bit too far. Half marathons and 30 kilometre races are medically less damaging and do not demand such prolonged training sessions with their inevitable prolonged "hammer hammer hammer down the hard high road". Dr. Archie Young has written a review paper on muscle enzyme release with prolonged exertion (which was presented in part at the London Marathon Medical Conference in May 1984) and a paper from Glasgow (Grant et al) shows that novice marathon runners do not believe all they read and most do not train the minimum of 50-70 miles per week recommended by many coaches for a successful marathon. Like many more experienced runners they find a threshold level of mileage above which the number of injuries becomes disproportionate for the increased fitness (if any). It certainly is dangerous to generalise from the world class athlete to the average jogger and more needs to be learned from this type of study.

SUDDEN DEATH

The risk of sudden death in athletes has been highlighted by the recent death of Jim Fixx, a guru of long distance running, who perhaps could not admit to himself or his public that he was getting symptoms of ischaemic heart disease himself after all he had written on the protective effect of exercise and its benefits on coronary artery disease. After 100,000 runners had completed the New York Marathon without a death a Frenchman died this

year. According to the New York Press he had had a myocardial infarction some years before. A possible policy for minimising the risks of sudden deaths in athletes is presented by Northcote and Ballantyne with a devil's advocate rejoinder from myself...if you stop them dying playing squash or running will you actually stop them dying?

THE DISABLED RUNNER

A further pair of papers present the problems of the disabled athlete. Dr. Peter Isaacs writes about a group of athletes he studied in the London Marathon with ileostomies and Tim Marshal writes about the wheelchair athlete.

Wheelchair athletes provoke a variety of reactions. Many spectators find their participation in major road races an inspiration. Their disability is there for all to see, unlike the diabetics, ileostomates, asthmatics, and ex-cardiac patients who have recovered from a coronary, had coronary bypass grafts, or a pacemaker and are content to join the foot race anonymously. Major races have been forced by public opinion and often by attention-seeking politicians to accept wheelchair entrants into races that have international recognition as foot races and where the mixing of vehicular traffic (wheelchairs can reach 40 miles per hour on a downhill stretch) and pedestrians is potentially hazardous.

The first London Marathon to accept wheelchairs was marred by one particular competitor who ran into at least two runners and knocked over a race marshal. Most wheelchair competitors do not behave like this but where the course is very congested with runners, a downhill section is a source of great frustration to the wheelchair competitor and tired marathon runners do not like being blasted by klaxons and sworn at in these circumstances. The Great North Run has a sharp downhill stretch followed by a sharp bend which was not safely taken by someone on roller skates who received bilateral upper limb fractures instead of a medal. Courses for any type of wheeled competitor have to be safe. Ideally wheelchair competitors are only entered through their own association and planning of facilities for wheelchair competitors must be considered well beforehand.

CLIMATIC CONDITIONS

Dr. Ron Maughan and Dr. Alan Porter have both contributed papers on thermoregulation and climatic conditions. These above all dictate the medical problems that are likely to be encountered on any particular day. The New York Marathon in October 1984 was run at 10.45 a.m. starting with an air temperature of 65 degrees Fahrenheit but 100% humidity rising rapidly to the high 70's (and even low 80's later in the day) with 80% humidity. Running my sixth marathon I deliberately ran a schedule 30 minutes slower than my best and drank

freely every mile, even drinking 2 beakers of water on occasion and finished in good condition only a few places lower down the field than my best. Less physiologically enlightened athletes did not appreciate the effects of the humidity. Many were suffering from heat by 9 miles and walking and hundreds developed heat problems and despite the excellent first aid arrangements over 200 had to be sent to hospital. In 1980 with an earlier date in October the race was run in a strong cold wind with a wind chill temperature of around freezing point and the main problem for hundreds of runners was hypothermia. They had set off fast in inadequate clothing, then slowed down and became cold. As suggested by Dr. Porter education of the runner so that he wears appropriate clothing for the weather conditions and also adjusts his pace and drinks frequently if the weather is hot are the most likely methods of reducing this type of problem.

CLOTHING

Fashionable nylon vests and shorts give very little protection from cold and wet and nylon being an extremely tough fibre is also extremely abrasive. Many of the marathon casualties in the London Marathon (several hundred in 1983) were runners whose groins, shoulders or other skin surfaces had been abraded until they bled by poorly designed clothing, often with fancy coloured flashes sewn to the edge adding to the trauma. The popular protection against abrasion is to smear all skin surfaces at risk with petroleum jelly.

I personally prefer to run wearing pure cotton clothing. This may look very old fashioned but a long sleeved cotton rugby vest and cotton soccer shorts (it is almost impossible to get cotton running shorts now) and pure cotton socks are I feel kinder to the skin and give more thermal protection in cold weather although if it is pouring with rain they do absorb a large amount of water.

PHYSIOLOGY OF MARATHON RUNNING

Dr. Clyde Williams has edited the physiological papers and also contributed a masterly review on "The metabolic challenge of the marathon". Much of it is based on work in his own department funded by the Sports Council. He also practises what he preaches and hides away in his paper as CW, the only male runner among the recreational marathon runners in Table II. Being surrounded

by one's female research students gives a new meaning to "recreational runner".

ORGANISATION OF MEDICAL SERVICES

The remainder of the papers deal with the organisation of medical services and the specialist medical input from physiotherapists and podiatrists, St. John and the Red Cross, with a paper from Richard Sainsbury on the biggest long distance race in Britain, The Great North Run. Professor Brian Williams' survey of marathon medical facilities in 1983 showed a huge variation in medical support. Among his conclusions were "The degree of sophistication of the first aid services in the 1983 marathons affected neither the volume of first aid contacts nor of hospital contacts. However the density of first aid service did determine the volume of first aid contacts". Longitudinal experience from the London Marathon in which the aim has been to improve the aid services at the finish so that very few problems need to be sent on to hospital would tend to contradict this first conclusion. Of 497 casualties at the finish in 1983, many initially quite sick, only two with gastrointestinal haemorrhage were sent on to hospital whereas the previous year many more were sent to hospital by less sophisticated first aiders. Experience from the London Marathon over the last two years shows a huge peak in casualty contacts between 16 and 20 miles, the most demoralising part of the race. Virtually all of these were trivial, blisters, chaffing, cramp, etc. and many seemed to call in for moral as much as medical support. Many of these problems would be ignored by runners who reach the finish in a state of elation. Certainly the number of "casualties" will reflect the services offered. Many American and even some European races have physiotherapists or massage therapists "freely available" at the finish for all the runners. New York now has psychotherapists at the start. The aim must surely be to help runners but not spoil them with more and more medical "luxuries". I hope that this journal and its recommendations will be found useful in planning the essentials of marathon and popular running events' medical support.

May I conclude by thanking everyone who attended the Conference and thereby contributed to the proceedings, thank again those who have contributed papers and finally thank the Sports Council and Health Education Council for supporting the Bisham Conference and for grants towards the publishing of this journal.