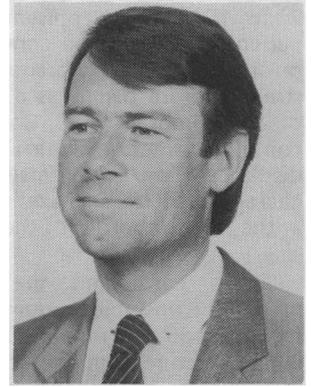


## MEDICAL IMPLICATIONS OF ULTRA MARATHON RUNNING: OBSERVATIONS ON A SIX DAY TRACK RACE

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### ABSTRACT

Medical records were kept of the injuries and illnesses sustained by competitors in a six day running race held in Nottingham in August 1982. The overall rate of injuries sufficiently severe to affect running performance was 60 per cent. These injuries are itemised and discussed with particular reference to the problems raised by this ultra distance race.

### INTRODUCTION

The second Charles Rowell Six Day Race took place at the Harvey Hadden tartan track stadium in late August 1982. Charles Rowell was a professional runner in Victorian times who ran a best distance of over 600 miles in a six day race held in "The Aggie" (Royal Agricultural Hall, Islington, London). The 1982 winner in Nottingham, Tom O'Reilly, ran 576 miles, that was 61 miles further than his nearest challenger, and numerous records were set, including world best times both for men and women at various ultradistances throughout the race.

Twenty-five competitors of age range 23 to 57 years (average age 41 years) commenced the race. Two of these were women, including the youngest competitor of 23 years of age who subsequently set a number of world records for women over various distances. One competitor was an experienced ultra walker. The winner's strategy was to run for periods of two to four hours, followed by a half hour's break. He usually took a recognised sleep period at the time he normally retired (approximately 5 hours) and chose to run at his own pace, ignoring the efforts of certain other runners who set world record times for certain distances. The leader after 24 hours had covered 135 miles, followed by the woman athlete who set a world record of 134 miles in a day. Ten athletes passed 100 miles at 24 hours, including the overall winner who was in ninth place at this time, (and who did not take the lead until the fourth day). Thereafter the winner's distances were:

48 hours	198 miles	(leader: 213 miles)
72 hours	301 miles	(leader: 314 miles)
96 hours	402 miles	
120 hours	490 miles	
6 days	576 miles	

His average weekly training distance in the previous six months was 120 miles a week, peaking 4 weeks prior to the event at 240 miles in that week. The training programmes for other athletes varied enormously; one athlete who completed 400 miles in this race felt that he did not wish to push himself to his full potential as he intended to pursue his weekly commitment of 250 miles the following week. Another competitor had prepared for the race by walking a 100 mile walk, a different endurance technique entirely and commenced the six day race with troublesome blisters.

As a result of experience in the USA the race directors had decided to change the direction of running every twelve hours in an attempt to reduce injuries, particularly in the inside leg. This did not indicate however that competitors rested from running equally during these twelve hour periods; most competitors had relatively lengthy rest (sleep) periods during the hours of darkness.

Thirteen athletes passed the 400 mile mark, including the 23 year old female and five males over 50 years of age. One competitor retired on the third day with bilateral Achilles tendinitis, the other twenty-four completing the course. Their average weight loss was 4 lbs (range +4 lbs—14 lbs).

### MEDICAL OBSERVATIONS

Physiotherapy services were available at the site of the race and medical attention was also available on a number of occasions throughout each day. Records were kept of the injuries sustained and of the consultations with the doctor and physiotherapist. The number of competitors who sustained injuries sufficiently severe

to impair their performance was 15 (60 per cent). Besides relatively minor complaints, such as muscle stiffness and blistering of feet, the principal injuries were:

	No. of cases
Achilles tendinitis	5
Psoas bursitis	3 (1 severe)
Tendinitis of the foot dorsiflexors	8 (5 severe)
Patellar tendinitis	5 (1 severe)
Patello-femoral syndrome	2 (1 severe)
Gastrocnemius strain	1 (severe)
Psychological stress	2 (1 severe)
Gross tiredness/exhaustion	1
Shin splints (probably anterior compartment syndrome)	3
Haemoglobinuria/haematuria	1

All of these injuries were stress related. Two of the competitors who developed Achilles tendinitis were unable to continue running. One retired from the race on the third day. The other continued to race by walking up to 50 miles a day for the last three days; the walking pattern was grossly abnormal, being a rotatory movement on heel strike with fixed ankle in an attempt to reduce calf contraction and Achilles stretch. Both had bilateral lesions with the development of fusiform swellings and associated peritendonitis – these signs developed as they continued to exercise after the onset of symptoms. It is a feature of the personality of long distance competitors of this calibre that injury does not prevent running unless severe; it is quite possible that tendinitis could extend under these circumstances to become partial rupture. It was interesting to note that as the race proceeded and the pace maintained the majority of competitors took some time after a rest to “loosen up” and reduce stiffness and initial pain. Occasionally, if the injury was not too severe, the symptoms would improve as the “training effect” of the race itself took effect. Only one competitor was thought to have a possible early stress fracture (of the tibia): symptoms did not worsen and may have been due to anserine bursitis rather than a stress fracture.

Of those competitors who suffered significant mental trauma, one had recently recovered from a tension illness and required reassurance after physical examination during the course of the race. The other developed rather paranoid feelings regarding his colleagues' views of possible drug taking, becoming very disenchanted with

the race and not running at all for the last 24 hours, apart from a run-in at the finish.

The red blood cells and haemoglobin were found in the urine of the competitor who walked over 400 miles – he had previously suffered from frank blood stained urine and he was not too alarmed. Urinalysis was not routinely performed.

## DISCUSSION

The distribution of the injuries catalogued in this race was approximately 50:50 for each leg. Although this was the second six day race to be held at the Harvey Hadden Stadium in Nottingham, insufficient records for statistical analysis were made of the first meeting and it is not possible to decide whether the change of direction helped to reduce the overall injury rate. It would appear that there may have been some effect on the predominance of unilateral injury. A change of direction every three hours, however, would seem more logical when attempting to equalise the stress on the pelvis and each leg. There would of course be other considerations such as basic fitness levels and quality of runners taking part, as this race is only beginning to pass from the novelty stage to one that is considered by athletes to warrant specific training schedules.

A number of the competitors who completed a “mere” 280 miles or so were clearly not in the same league as the top half dozen runners and it would seem that in future years the organisers would probably have to decide whether to make entry for the race dependent upon higher qualifying standards.

The weather conditions in Nottingham incidentally in late August, although variable throughout the six days, were not extreme in any way and no problem was recorded in relation to hyper or hypothermia or dehydration. Since a number of competitors attempted to set 24 hour records as well as six day records there was a certain element of gross muscle tiredness and exhaustion peaking at about 24 hours. One competitor virtually fell asleep on the track though apparently recovered without any mishap after a few hours break. There are a number of ultramarathon races planned throughout the world over the course of the next twelve months and it will be interesting to collate further information on the types of injury sustained.



## Medical implications of ultra marathon running: observations on a six day track race.

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