ALTITUDE – A COACH'S CONCLUSIONS

DENIS WATTS

Principal National Coach, British Amateur Athletic Board

A provisional expedition went to St Moritz for five days from May 4-9, 1972. It was designed to establish, well in advance, if those athletes taken up to altitude would acclimatize satisfactorily. If any showed a poor reaction we would know that if selected, they should not be taken to altitude before Munich. The expedition proved successful. Twenty-seven athletes were taken up with Dr Peter Travers, Ray Watson, and coaches Denis Watts and Harry Wilson. Six of these 27 were eventually selected to represent Great Britain at Munich.

The effect of altitude on blood pressure and haemoglobin during this visit and during the final three weeks preparation before Munich (which for most was from August 6-25) is shown in Table I. The last column of this Table indicates that all six athletes were at peak fitness, so far as haemoglobin was concerned, when they left St Moritz for Munich. They had also had the advantages of ideal training conditions.

The hotel was near enough for the centre of the town to be accessible. It had its own indoor swimming pool, sauna, tennis court, and other facilities for recreation. The food generally was excellent but we had to wait for service and this sometimes became tedious to athletes who were concerned with getting on with their training.

We had three levels for training:

1. At St Moritz (6,100 ft – 1,860m) there was a track with two lanes of cinder and two lanes of rubcor (hard and soft). Woodland, grass, and hills were suitable for hill running and long, steady runs on road and grass.

2. At Corviglia (8,600 ft – 2,620m), which we reached by Funicular was mountain grass and a 680 yd (620m) irregular soft track round a small lake. This was ideal for forms of interval running at higher altitude.

3. We went to Pis Nair (10,000 ft – 3,050m), reached by cable-way to the summit, on occasions to spend time at the greatest possible altitude. Although some authorities would claim that just staying at this height for a time was sufficient, we exercised in various ways.

As a result of all this, the training towards the end of the three weeks we spent at St Moritz was excellent and sometimes brilliant. Our prospects looked good and I felt quietly confident that we would do well at Munich.

However, although we had a finalist in every event

from 800 metres upwards, our results did not, in my opinion, match up to the general level of fitness reached before leaving St Moritz. I feel now that insufficient work had been done on the period required for re-acclimatization, and that more experimental work is needed to give the answer.

Experiments in Germany and America had suggested that five to 10 days was the best length of time for re-acclimatization. We planned, therefore, to spend not less than five days and not more than 10 in Munich before competition. This we worked out carefully. In fact, what happened was that when we returned to sea level, the athletes felt extreme fatigue running into greater air pressure, and they took much longer to adjust than had been anticipated. Andy Carter felt that he had not had sufficient time to do the necessary speed work. In fact, I was able to do only one session of speed work with him, and that not very satisfactory, in the five days.

Later, in 1973, I met in Mainz some of the Russian coaches responsible for middle distance running and they told me that they went up to altitude three times, for long periods, in order to experience re-acclimatization and find the practical answers to the time problems. They reckoned it took 14 – 21 days at the most.

Table II shows the performances of our middle- and long-distance athletes in Munich compared with their previous best performance. Only five bettered their previous best and four of these were women – whether this is of any significance I do not know. However, I think there is some significance in the fact that Sheila Carey, who had a personal best before going down of 4 min 16.2 sec for 1500m, was sent down early. This was for various reasons: she wanted to be with her coach, she was a little unhappy, she was the only married girl in St Moritz without her husband and she had a bit of Achilles tendon trouble. So she went down 15 days early, and returned a time of 4 min 4.8 sec – a fantastic improvement – finishing fifth. However, I must point out that, in my opinion, Sheila Carey at 4 min 16.2 sec had not recorded anything like her best. In other words, she had not had sufficient races over the distance.

Two other athletes seemed to derive benefit from altitude training after a longer period of acclimatization. Joyce Smith, whose personal best was 4 min 12.8 sec before she went to altitude, returned a time of 4 min 9.4 sec in her semi-final of the women's 1500m after 10 days of acclimatization. Twenty-one days later, back in

TABLE I					
<i>Effect of altitude on blood pressure and haemoglobin</i>					
Name and event	Blood pressure.			Haemoglobin	
	May 5 (2nd day)	May 8 (5th day)	Aug. 24 (18th day)	May 8 (5th day)	Aug. 24 (18th day)
Andy Carter 800m	156 76	134 68	128 74	97%	113%
Margaret Coomber 800m	144 88	130 76	122 68	100%	98%
Brendan Foster 1500m	148 74	120 62	117 66 (19th day) (29.8.72)	103% (2nd day) (5.5.72)	112% (19th day) (29.8.72)
John Kirkbride 1500m	132 78	122 58	118 60 (14th day) (29.8.72)	90%	102% (14th day) (29.8.72)
Peter Marlow 20km walk	132 84	130 77	124 68	100%	109%
Joyce Smith 1500m	130 80	126 69	106 56	90%	99% (19th day) (27.8.72)

England, she ran a brilliant 9 min 5.8 sec for 3000m with, as I said, a haemoglobin level that had dropped only 1g per 100 ml since St Moritz.

Andy Holden, whose personal best for the 3000m steeplechase had been 8 min 28.8 sec, did nothing in the Games; but 21 days after returning he was timed at 8 min 26.4 sec, to record a personal best performance.

I said at the beginning that the training was good at altitude. As an example David Bedford's schedule is given in Table III. At this time he was doing 258 km (160 miles) per week, which is a fantastic mileage.

Andy Carter's training schedule for the 800m was laid out for each day of the week, but he did not carry out all this work on the days stated. Carter, quite rightly in my opinion, selects the workouts from his schedule which suit the conditions and his own feelings on the day. Providing the right ingredients are added during each fortnightly cycle, the results will be better than ploughing through a regimen come rain or shine.

From the coach's point of view this is the difference in attitude between that of General Patton who pushed through on schedule, whatever the cost, and that of Fabius Maximus (Cunctator) who saved Rome from conquest by Hannibal by avoiding battle until conditions were favourable. Thus Carter will always do his best work in the most favourable conditions and, to put it simply, will avoid trying to do speed work into the wind or interval running on an overcrowded track.

This year (1973) Carter's training has been entirely at sea level and with the specific intention of winning the 800m in the European Cup Final in Edinburgh. To this end, in August, I added extra workouts that I considered would give him the strength to come back at Arzhanov (USSR) or hold him off during the later stages of the race. They would cause him extreme fatigue which would, I thought, put him in the sort of position, lactic acid-wise and fatigue-wise, as he would be in towards the end of the race; I would then ask him to do a fast 300m, as though he were competing over that distance against Arzhanov. The 20 seconds recovery time was always exact in that the recovery watch was started as the timing watch was stopped. Thus, this was an exercise in deceleration and acceleration at the completion of each 200m. At the completion of the 200's he would do the 300m when completely fatigued. After this, he did a time trial on his own over 800m, again to give him confidence, and he ran in a veterans' race, from the front all the way, in 1:46.1. At that point I felt he would win in Edinburgh which he did. But could he have done the training at altitude? I do not know. And that is the point I wish to make.

I consider that this type of work was essential for him to reproduce his best in competition. In quality, it could not have been carried out at altitude nor within days of returning to sea level. Hence the evidence I have suggests that sea level training this year (1973) has been better for him (1:46.5 in 1972; 1:45.1 in 1973). However, given three weeks at sea level after three weeks in St Moritz might yet give the best of both worlds – frankly, at the moment, I do not know.

TABLE II

Performances of middle- and long-distance athletes

Event	Name	Whether in St Moritz	Best performance before Munich	Best performances in Munich	Remarks
800m	A. Carter	Yes	1:46.2	1:46.5 1:46.6	6th Felt he needed more time to re-acclimatize
	D. Cropper	Yes	1:46.9	1:48.4 (S-final) 1:47.5 (Heat)	
	C. Campbell	No	1:46.1	1:54.0	Injured
1500m	B. Foster*	Yes	3:39.2	3:38.2 (S-final) 3:39.0 (Final)	5th
	J. Kirkbride	Yes	3:38.5	3:45.3 (Heat)	Winning time of heat: 3:44.2
	R. Smedley	No	3:38.5	3:42.1 (Heat)	Winning time of heat: 3:41.6
5000m	D. Bedford	Yes	13:17.2	13:43.2	12th Viren won in 13:26.4
	I. Stewart	Yes	13:22.8	13:27.6	3rd
	I. McCafferty	No	13:19.8	13:38.2 (Heat) 13:43.2 (Final)	11th
10,000m	D. Bedford	Yes	27:47.0	27:53.6 (Heat) 28:5.4 (Final)	6th
	D. Holt	Yes	28:41.8	28:46.8 (Heat)	11th in heat, only 5 sec below best
	L. Stewart	Yes	28:11.8	28:31.4 (Heat)	6th in heat, outkicked over 500m
3,000m Steeple-chase	S. Hollings	Yes	8:31.2	8:35.0 (Heat)	
	A. Holden	Yes	8:28.8	8:33.8 (Heat)	
	J. Bicourt	Yes	8:34.8	8:38.8 (Heat)	
Marathon	R. Hill	Yes	2:9:28.0	2:16:30.6	6th
	D. Macgregor	Yes	2:15:06.0	2:16:34.4	7th
	J. Kirkham	No	2:15:17.0	2:21:54.8	20th
20km walk	P. Embleton	Yes	1:27:59.0	1:33:22.2	
	P. Nihill	Yes	1:24:50.0	1:28:44.4	
	P. Marlow	Yes	1:33:37.0	1:35:38.8	
50km walk	P. Nihill	Yes	4:11:31.2	4:14:09.4	9th
	J. Warhurst	No	4:18:31.0	4:23:21.6	18th
	H. Tymms	No	4:24:02.0	4:34:43.8	25th

Event	Name	Whether in St Moritz	Best performance before Munich	Best performances in Munich	Remarks
400m (women)	J. Roscoe*	No	53.3	53.7 (Heat) 53.0 (Final)	
	J. Simpson	No	52.5	54.1	
	V. Bernard	No	53.2	53.3 (heat) 53.3 (S-final)	
800m (women)	P. Cropper	Yes	2:1.7	2:3.5 (Heat)	
	R. Stirling*	Yes	2:2.1	2:3.6 (Heat) 2:2.4 (S-final) 2:00.2 (Final)	7th
	M. Coomber*	Yes	2:4.1	2:3.0 (Heat)	
1500m women	J. Smith*	Yes	4:12.8	4:9.4 (S-final)	10 days re-acclimatization
	S. Carey*	Yes	4:16.2	4:7.4 (S-final) 4:4.8 (Final)	13 days 15 days re-acclimatization
	J. Allison	Yes	4:13.2	4:14.9	

* = Best personal performance at Munich. (Note: Janette Roscoe did not go to St Moritz).

TABLE III
<i>David Bedford's training schedule in St Moritz (June 1972)</i>
Three sessions per week were on the track and varied between:
8 x 800m in 2 min 10.0 sec with 3½ min rest
20 x 400m in 62.5 sec with a 200m jog to recover
20 x 200m in 30.8 sec with a 100m jog to recover
30 x 300m in 45 sec with a 200m jog to recover

DISCUSSION

DR BROTHERHOOD: You say that when Andy Carter returned from St Moritz he felt he would have liked more time at Munich doing speed work. Why did he say that? What were his subjective reasons?

MR WATTS: The 800m runners had only five days for re-acclimatization, which was at the bottom end of the time required. He felt tired and listless, his legs were dead, and he was just not "there". His heat was something of a struggle for him.

DR BROTHERHOOD: Do you think he was getting into oxygen debt more easily? Was that the sort of fatigue that caused the fall-off in performance?