BMC NEWS

Official Journal of the British Milers' Club

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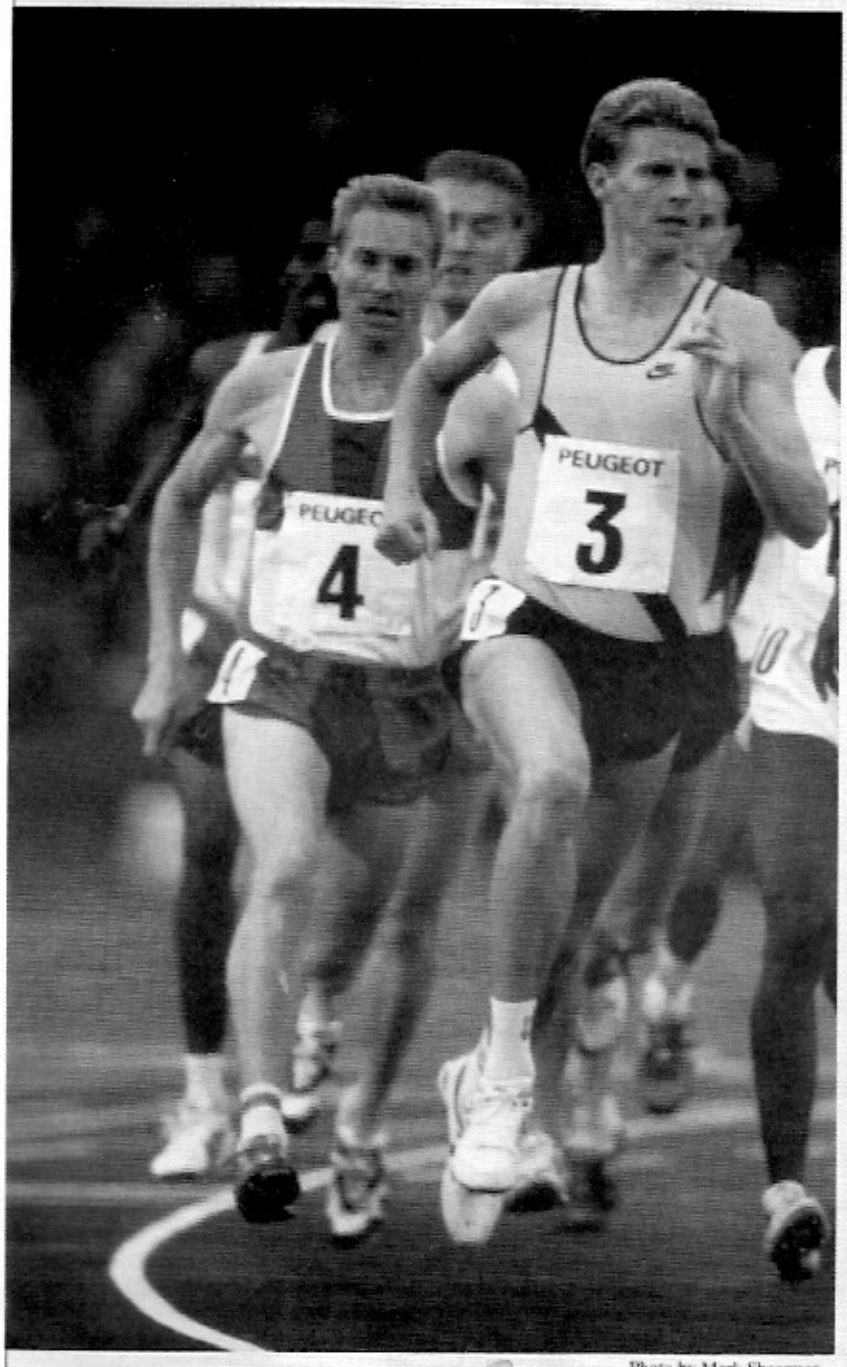

Photo by Mark Shearman

Peter Elliott and Steve Cram - still showing the way forward.

The British Milers' Club

Founded 1963

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JOURNAL

BMC News is published twice yearly in April and November by the British Milers' Club. *BMC News* is distributed free to all members. Non-members can subscribe for £12 per annum.

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The training articles expressed in this journal do not necessarily reflect the opinions of the National Committee. They are published as part of the BMC's policy of a liberal approach to diverse training theories.

MEMBERSHIP

Membership is limited to those athletes who have achieved the required qualifying times, and to Senior BAF Coaches. Associate membership is granted to those possessing special qualifications likely to benefit the club.

Members receive the *BMC News* twice a year. They are eligible for reduced entry fees to BMC races and courses, as well as receiving travelling expenses to some sponsored BMC races.

There is a joining fee of £10 to cover the cost of a BMC Vest. Annual subscriptions of £10 (overseas £15) are due 1st January each year. All applications to join the BMC should be sent to the Membership Secretary enclosing a large SAE.

MERCHANDISE

BMC vests (gold/white - S/M/L/XL - £10), BMC ties (£5) and BMC caps (£5) are available from Runnersworld, 333 Rayners Lane, Pinner, Middlesex (Tel 0181 868 6997). Please make all cheques payable to 'Runnersworld'.

Back issues of *BMC News* (£2 each) and the *BMC Fitness Testing Booklet* (£1) are available from the Treasurer, Pat Fitzgerald. Please make all cheques payable to 'The British Milers' Club' and enclose a large SAE.

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BMC QUALIFYING TIMES
(from 1st January 1995)

	MEMBERSHIP		GOLD Standard	
	800m	1,500m	800m	1,500m
Senior Men	1:56.0	3:56.0	1:52.0	3:49.0
Under 17	2:10.0	4:30.0	1:55.0	4:00.0
Veterans	2:10.0	4:30.0	2:00.0	4:10.0
Senior Women	2:20.0	4:45.0	2:12.0	4:30.0
Under 17	2:25.0	5:00.0	2:16.0	4:45.0
Veterans	2:25.0	5:00.0	2:20.0	5:00.0

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1995 NATIONAL SQUAD RACES

The dates, venues and events for our 1995 "National Squad" Races have been finalised as per the table alongside. All BMC members are encouraged to run at these graded meetings. Registration can be done in three ways:

i send in the form enclosed with this issue of *BMC News*;

ii telephone Matthew Fraser Moat on 01304 379777;

iii send e-mail to mfm@delphi.com

Entries must be received at least 10 days before the meeting. Acceptance of entries after the closing date is at the sole discretion of the meeting organiser.

Regrettably there will be no Reebok Track Challenge in 1995, and so the BMC will be financing these meetings themselves out of existing reserves. Because of postage and photocopying costs, acceptance of entries, timetables, start-lists, maps etc. will not be sent out unless requested and a sae is enclosed. However, a start list will be posted on the *rec.running* usenet discussion group on the internet four days before each meeting.

Sponsorship is still being sought with the assistance of Jim Cowan at *Sporting Chance*, and if this is successful, we hope to be able to offer petrol money provided four athletes are brought in a car.

Entry fees for the races will generally be £2 for BMC members, £4 for non-members, but may be subject to local variations. There will be a £1 ground admission at some venues, probably at Wythenshawe, Crawley and Solihull, to cover the costs of track hire and officials.

1995 REGIONAL RACES

Our 1995 Race Programme has 210 races at 78 meetings at 40 different venues, establishing a truly comprehensive nation-wide network. The full BMC Fixture List is printed on page 32.

BMC CHAMPIONSHIPS

To fill the gap in the calendar left by the demise of the UK Championships, we will be holding our own BMC Championships at Loughborough on Saturday June 10th and Sunday June 11th.

The events will be 800m, 1500m, 3,000m and 10,000m for senior and junior men and women. Trophies will be presented to winners of each event. Only BMC members will be eligible to compete, and BMC vests must be worn.

BMC NATIONAL SQUAD RACES 1995

Date	Venue	Time	Events	Register by:
Wed 17th May	Wythenshawe *(sponsored by Asics)*	7pm	M800 W800 M1500, W1500	Mon 8th May *(Norman Poole)*
Sat 27th May	Crawley	2pm	M800, W800 M1500, W1500 M5000, W5000	Thurs 18th May
Sat 10th June Sun 11th June	Loughborough BMC Championships	Heats & Finals	M800, W800 M1500, W1500 M3000, W3000 M10000, W10000	Mon 29th May
Sat 24th June	Cardiff	2pm	M800, W800 M1500, W1500	Wed 14th June
Wed 5th July	Grangemouth	7pm	M600, W600 M1500, W1500	Mon 26th June
Tues 18th July	Stretford	7pm	M1000, W1000 M Mile, W Mile M5000, W5000	Sun 9th July
Wed 9th Aug	Watford	7pm	M800 W800 M1500, W1500 M3000, W3000	Mon 31st July
Sun 20th Aug	Solihull	2pm	M800, W800 M1500, W1500 M3000, W3000	Thurs 10th Aug
Sat 2nd Sept	Oxford *Relays*	2pm	M4x800, W4x800 *M4x1Mile, W4x1Mile*	Mon 21st Aug
Sun 10th Sept	Bristol Road Miles	2pm	M Mile, W Mile	Mon 4th Sept

Heats will take place on the Saturday, and the finals will take place during the Loughborough vs AAA's vs GB Students match on the Sunday. Qualification for the finals will be very severe. Only the winner will go through by rights, and the remaining places in the final will be determined on the 'fastest-loser' basis. If there is demand, a 'B' final may be held.

Regrettably, as the track is only six lanes, it will not be physically possible to combine the Loughborough match races with our championships. Therefore the six athletes in each event selected for the Loughborough match will have their times inserted into the results of the BMC Championships, provided of course that these athletes have qualified via the heats.

Seeding for the heats will be done on 1994 ranking times, and entries must reach Matthew Fraser Moat by May 29th. It is hoped that sponsorship will allow us to provide overnight accommodation for those athletes that reach the finals.

NEW REGIONAL SECRETARIES AND RACE ORGANISERS

Our national coverage has been strengthened with the addition of the following regional secretaries and race organisers: Phil Hayes (North East), Michael Gooch (Humberside), Ken Leader (Enfield), John Sullivan (Highgate) and Steve Benson (East Anglia).

SOUTH WEST GRAND PRIX

Mike Down has arranged dates as follows:

Wed 31st May	Bath Mile
Sun 9th July	Salisbury 1,500m
Sat 24th June	Cardiff 1,500m
Sun 27th August	Exeter Mile
2nd September	Oxford Relays
3rd September	Southampton Mile
10th September	Bristol Road Mile

Post Office Counters are once again providing sponsorship. Oxford will be a 'time-trial', calculated on the athletes' splits in the relay meeting. For further details contact Mike Down on 0117 973 3407.

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EASTERN REGION GRAND PRIX

Ian Chalk has arranged dates as follows:

Sun 2nd July	Kings Lynn 1,500m
Wed 19th July	Bedford 800m
Wed 26th July	Milton Keynes 1,500m
Tue 15th August	Ipswich 800m
Mon 28th August	Welwyn 1,500m

The races at Kings Lynn and Ipswich will be promoted by Steve Benson.

OXFORD RELAY MEETING

This is being held on Saturday September 2nd. This year club teams will be encouraged as well as BMC National and Regional Teams. A full list of records under attack is listed opposite. To run in the relay meeting, please contact Matthew Fraser Moat on 01304 379777.

SUB-FOUR OPPORTUNITIES

Male athletes always complain of insufficient opportunities to break four minutes for the mile. For these athletes, therefore, we have designated three races, paced to 1:58 for 800m and 2:57 for 1,200m, i.e. 59 secs per lap, at the following meetings:

Wed 10th May	Bedford
Wed 31st May	Bath
Tue 18th July	Stretford

BMC members tipped to go sub-four for the first time in 1995 include Spencer Barden, Neil Caddy, Ewan Calvert, Bobby Farren, Grant Graham, Ian Grime, Phil Mowbray, Glen Stewart, Brian Treacy, Steffan White and Bruno Witchalls.

FSA ALTITUDE TRAINING APRIL 1995

Travel bursaries have been given to four young athletes and a nominated BMC coach to join the BAF training camp at Albuquerque in April. The athletes are Des Roache, Claire Swift, Alan Tatham and Bruno Witchalls.

A condition of the bursary is the submission of a training diary by these sponsored athletes, and a full report of the benefits, or otherwise, of the camp.

JUNIOR ENDURANCE WEEKEND

Norman Poole, Phil Banning and David Iszatt arranged the inaugural BAF / BMC Junior Endurance Weekend at the Garth Hotel, Stafford on March 18th & 19th. Selected junior athletes had their accommodation paid for from last year's grant from the Foundation for Sport and the Arts.

OXFORD RELAY MEETING : 2nd September 1995

The following records will be under attack:

4 x 800m Men	England & World	7:03.89	UK National Team	30th Aug 1982
	Scotland	7:29.2	National Team	9th Aug 1961
	Northern Ireland	7:38.6	Annadale Striders	4th June 1986
	Wales	7:44.7	BMC Wales	17th Sept 1994
	Nat Junior	7:35.3	Liverpool Harriers	14th Aug 1990
	Nat Veteran		no decent mark	
4 x 800m Women	England	8:20.73	UK National Team	5th Jun 1993
	Scotland	8:44.4	Scottish WAAA	21st Aug 1971
	Wales / NI		No decent mark	
	Nat Junior	8:53.1	Havering AC	24th May 1980
4 x 1 Mile Men	England	16:17.4	Bristol AC	24th Apr 1975
	Wales	16:59.8	Birchgrove Harriers	28th Aug 1965
	N Ireland	17:40.0	9th Old Boys	27th May 1967
	Scotland	18:07.31	Edinburgh SPCAC	2nd Sept 1989
	Nat & World Junior	16:56.6	BMC Junior Squad	10th July 1993
	UK Allcomers	16:21.1	BMC National Squad	10th July 1993
	Nat Veteran		no decent mark	
4 x 1 Mile Women	England & World	19:17.3	BMC National Squad	10th July 1993
	Scotland / Wales / NI		no decent mark	
	Nat Junior		no decent mark	
	Nat Veteran	21:13.3	BMC Veteran Squad	10th July 1993

FSA JUNIOR DEVELOPMENT PROGRAMME 1995

We have focused our 1995 application to the Foundation for Sports and the Arts to quality junior development races for U18 junior men and junior women at the following dates and venues:

Mon 8th May	Millfield 800m / 1,500m
Wed 17th May	Wythenshawe 800m
Sun 11th June	Lough 800m / 1,500m
Sat 24th June	Cardiff 800m
Wed 5th July	Grangemouth 800m
Tue 18th July	Stretford Mile
Sun 20th August	Solihull 800m

These races will generally take place alongside the National Squad Races. For further details, please contact David Iszatt.

1995 SPONSORS

We gratefully acknowledge the assistance of the following commercial sponsors of the BMC during 1995 *[list compiled 1st April 1995]*.

Asics	Wythenshawe
Bath University AC	Bath Mile
Bedford & County AC & Bedford Borough Council	Bedford
Cardiff City Council	Cardiff
Post Office Counters	SW Grand Prix
Sports Tours International	Lanzarote accom.
Reebok	Lanzarote prizes

1995 ANNUAL GENERAL MEETING

This will be held at St Hilda's College, Oxford on Sunday 3rd September 1995, at 11am. For further details please contact Ian Chalk on 01582 769336. It is also proposed to hold a young athletes' training day at Bedford in October.

NATIONAL ENDURANCE WEEKEND

Norman Poole arranged the third National Endurance Weekend at Stafford last November. Amongst the speakers were Malcolm Arnold and Ian Stewart, both of whom shared the common theme of breaking down the barriers between BAF and the athletes. Amongst those attending were: Steve Cram, Peter Elliott, Gary Lough, Kevin McKay, David Moorcroft, Curtis Robb and Alison Wyeth. The weekend attracted good coverage in *The Times* and the *Daily Mail*, and it is planned to repeat the weekend in November 1995.

DEVELOPMENT OFFICER'S AWARD

This was awarded to Tom Buckner for his outstanding contribution to the BMC during 1994. Runners up were Ian Gillespie, Ian Grime and Cathy Dawson. All nominees were presented with a cup at the National Endurance Conference at Stafford last November.

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BMC IN LANZAROTE 1995

Our warm-weather training trip to Club La Santa Lanzarote took place in March.

Thanks to sponsorship from Sports Tours International and a personal benefactor, the following BMC members received assistance with their accommodation expenses: Ewan Calvert, Angela Davies, Matthew Davies, Ian Gillespie, Grant Graham, Kheredine Idessane, John MacFayden, Steve Mosley Lynne Robinson and Wendy Llewellyn. For a full report, please see page 28.

FASTEST EVER BMC 1500m?

Following on from our claim in the last issue that Ian Grime ran the fastest ever BMC 1,500m at Solihull last year with 3:40.35, Alistair Currie points out that Dave Lewis ran 3:39.0 at Stretford on 9th August 1983. Although it wasn't listed in the *BMC News* at the time, have we any members who could confirm whether or not this was in fact a BMC race?

BMC DATABASE

The BMC Database has expanded to over 1,500 coaches and athletes, of which 650 are currently paid-up members. With this issue of the *BMC News* we enclose a print-out of the information that we currently have on file for you. Please could each member check their own information and return any corrections to Matthew Fraser Moat as soon as possible.

Please note that athletes who supply their correct phone-number are more likely to secure race invitations. Athletes with answer-phones do better still!

1995 SUBSCRIPTIONS

Your 1995 subscriptions were due on January 1st. If you have not paid already, please could you send your cheque for £10 (£15 overseas) made payable to the BMC, together with any change of address, to the Treasurer Pat Fitzgerald.

RECOMMENDED SERVICES

i ***Athletics International***, for simply the best coverage of international results. Write for a sample copy to Mel Watman, 13 Garden Court, Marsh Lane, Stanmore, Middlesex HA7 4TE.

ii ***Len Lewis***, for an excellent second-hand, no-obligation, book-search service. Please ring any evening 01938 552023 or write to Len Lewis, 3 Aubet Drive, Guilsfield, Welshpool, Powys, SY21 9LX.

iii ***Sports Tours International***, for the best warm-weather training trips ever. Write to Vince Regan, Sports Tours International, 91 Walkden Road, Walkden, Worsley, M28 5DQ or phone 0161 703 8161.

iv ***Purple Concentrate***, being formed summer 1995, no-frills race management and other sponsorship services, for up and coming athletes. Please ring 0956 887534.

LOST MEMBERS

We have no addresses on file for the following members:

9 John Thresher; 48 Lawrence Reed; 57 Peter Milner; 59 Derek Haith; 83 Frank Hartas; 107 Valerie Tomlinson; 122 Maurice Benn; 125 Alan Simpson; 135 Alison Noble; 174 William McKim; 197 Margaret Beacham; 213 John Boulter; 222 Rita Ridley, 223 Iris Cook; 403 Geoff Plant; 460 Andrew Carter; 499 Brendan Foster; 572 Edward Wingrove; 600 Paul Rozier; 1099 Joan Allison; 1348 Derek Mann; 1411 Simon Scott; 1423 Michael Bromilow; 1491 Anthony Morrell; 1530 Steven Barrett; 1589 Alec Kyriakides; 1594 Gordon Adams; 1627 Howard Crabtree; 1706 Diana Watkins; 1890 Ian Burgin; 1933 Kenneth Mortimer; 1936 Bill Blair; 1961 Thomas McKean; 2033 Martin Philpott; 2038 Hayley Haining; 2141 Susan Samme; 2149 Ian Hamer; 2154 Nicola Morris; 2161 Stephen Gildert; 2194 Ceri Pritchard; 2269 Mark Scruton; 2301 Abrie de Swardt and 2409 Mark Sesay.

These are the members whose *BMC News* was returned undelivered last Autumn, but they are all paid up! If any member knows the whereabouts of any of these members, please write to Pat Fitzgerald.

COMMITTEE MEETINGS

The dates of the next meetings are : Sunday July 2nd - Birmingham; Sunday 22nd October - Bedford. Please contact Ian Chalk if you wish to put an item before the Committee.

NEXT ISSUE

Matthew Fraser Moat is standing down as editor of *BMC News* because of increasing work commitments.

Whilst a new editor is being sought, the next issue will be compiled by David Iszatt. Please send all material for the next issue to him at 27, Selly Wick Road, Selly Park, Birmingham B28 7JJ by 31st July 1995. It is planned to publish the next issue in October 1995.

NEW MEMBERS

Congratulations to the following who have been elected to the BMC since the last issue:

2448	Gareth Price U17		2472	Penny Thackray	Gold
2449	Caroline Bell U17		2473	Guy Amos	Gold
2450	Carl Harries U20		2474	Eric Nash	Honorary
2451	Scott Selby U20		2475	Sharon King	Gold
2452	Matt Kinnane	Gold	2476	Ann Griffiths	Gold
2453	Karl Wright	Gold	2477	Caroline Slimmin	Gold
2454	Spencer Barden	Gold	2478	Robert Hough	Gold
2455	Tommy Yule U20		2479	Kevin Farrow	Gold
2456	Laura Hale U17		2480	Rachael Ogden U17	Gold
2457	Charles Coleman		2481	James Greenhough	
2458	Gordon Bury	Coach	2482	Angela Davies	Gold
2459	David Fryer	Coach	2483	Ian Manners	Gold
2460	Paula Fryer	Gold	2484	Mark Bryant	Coach
2461	Tom Page U17		2485	Joanne Gardener U20	
2462	Lynne Robinson	Gold	2486	Stuart Moran U20	
2463	Ceri Wensley U17		2487	Tom Galpin U17	
2464	Frank Boyne	Gold	2488	Peter Atkinson	Coach
2465	Helen Daniel	Gold	2489	Emma Alberts U17	Gold
2466	Tim Grose		2490	Raymond Wiggett U20	
2467	Kim Critchley	Gold	2491	Steven Hope	
2468	Andrew Knight	Gold	2492	Gabrielle Collison	
2469	Paul Drake	Gold	2493	Ian Mitchell U20	
2470	Desmond English	Gold	2494	Thomas Mayo U20	
2471	Kheredine Idessane	Gold	2495	Karen Johns U17	Gold

How Steve Cram Trains

by Dr Norman Poole, *UK National Event Coach Men's 800m & 1500m*

First presented by Steve Cram and Norman Poole at the BAF National Endurance Conference, November 1994.

1 Introduction

Steve Cram, multiple world record holder and the winner of numerous middle-distance major championship medals, has been one of the world's most consistent performers for more than ten years. Injuries have proved to be the only obstacle to him continuing to achieve at the highest level in recent times.

Although his track exploits are well documented, his training methods have never been published. From discussions with Steve in Stuttgart during the 1993 World Championships and in the UK with his coach, Jimmy Hedley, who has supervised and helped plan virtually all of his training from the age of 10 years, I have attempted to describe how Steve's basic training is planned throughout a twelve month period.

The main principles of his training have been maintained during the period 1975 to the present as have his many ideas and basic philosophy on periodisation and race planning.

2 The Early Years

Steve Cram first started to train with Jimmy Hedley when he was 10 years old and by the time he had reached 15 years he was running seven days per week, once per day.

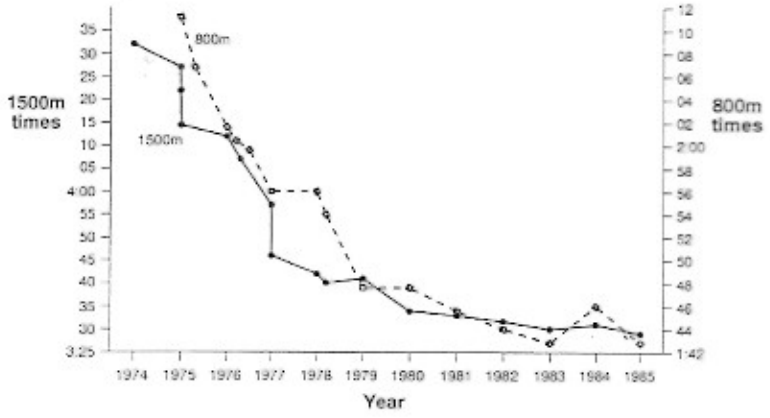
During the first five years of Steve's involvement with the sport, Jimmy actually ran in most of the training sessions with his young group. This he felt was of particular value since he could control the pace and intensity of the training as the training load was gradually increased.

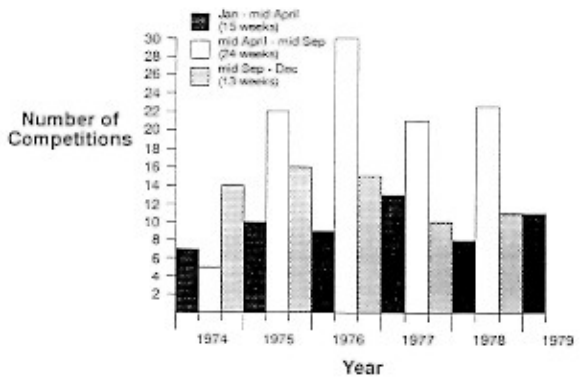
Between the ages of 13 and 15 years, Jimmy introduced Steve to training on different surfaces on a regular basis, thereby offering as much variety as possible e.g. grass, beach, forest, trails, road and track. During this time, the emphasis was on the enjoyment of training. Jimmy strongly believes that this is very important if a young athlete is to continue in his desire to absorb and benefit from increased training loads.

Apart from training on these various surfaces, using fartlek type sessions in particular, Steve also raced on them as a young athlete. As well as cross-country and track, Steve was of international standard as a junior in the sport of Orienteering. He eventually decided to forego this particular sport in his junior years due to the greater probability of injury during the winter months.

At the age of 15 years, it is an interesting fact that the young Steve Cram was not even the best middle-distance athlete in his county. It could be argued that those particular youngsters who consistently beat him had superior natural physical ability. But it is the vital chemistry of natural talent, the desire to train and progress and the development of a superior competitive nature which makes the champion. It is these latter two qualities in particular which, in the opinion of Jimmy, marked out Steve Cram as 'different from the rest'.

It was events which also occurred during his 15th year which both Steve and Jimmy credit as important in the development of these two character assets of the future champion. These were monthly organised training sessions of the best young athletes in the County, a scheme arranged by the then BMC Regional Secretary, and now the UK National Event Coach for the men's marathon, Gordon Surtees. They were highly competitive training sessions and a unique opportunity for Steve to measure himself, apart from actually racing, against the best in his area. More importantly for Steve was the realisation of what training levels were required for him to improve and to be the best in his County. These monthly training gatherings proved to be the 'seed bed' of a determination to succeed. They also began to draw out the competitive nature of Steve





How Steve Cram Trains (2)

Cram and a real sense of ambition which enabled him to willingly embark on his first early introduction to hard training.

Just as today Steve's summer season focuses on a major Championships, so it was in his early athletic years that his main aim for the season was the English Schools' Championships.

Steve Cram's training did not, therefore, undergo a radical change as he stepped on to the World stage of major Championships as a senior athlete. As explained, he had in many ways been developing his training and approach to championships for many years.

In Figure 1, I have plotted two figures which chart the progress of the young Steve Cram from the age of 13 years in 1974. From the meticulous records kept by his father, Bill, between 1974 and 1979, I have shown each step in the improvement of Steve's personal best time for both 800m and 1,500m. Between 1979 and 1985, the year of Steve's current pbs, I have only shown his season's best times.

It is interesting to note how the progression of both 800m and 1,500m are equally mirrored. The dramatic improvement in Steve's 1,500m best times during 1977 at the age of 16 years is also equally apparent.

In the Figure 2, I have plotted the number of competition dates for Steve during three periods of each year from 1974 to early 1979. These periods are January to mid April, mid April to mid September i.e. the track season, and mid September to the end of December.

The high number of competitions, averaging almost one per week during the period 1975-78, is immediately obvious. The number of races is actually higher during each track season than the figure suggests since Steve often competed in more than one race during a particular competition meeting. In many coaching circles today, this number of competitions for a young athlete would be considered unduly high. But it must be stressed that many of these races were low-key local competitions which were utilised by Jimmy Hedley as competitive training sessions. As previously mentioned, Jimmy Hedley had always emphasised the importance of the development of the competitive nature of the young athlete if he was to succeed as a senior. The foundations of Steve Cram 'the competitor' and Steve Cram 'the racer' were laid in these numerous races during his early years. He enjoyed them. He thrived and progressed on them, and by the time he arrived on the World stage, he was already a highly experienced competitor.

During these formative years, Jimmy Hedley had also unselfishly encouraged the young Steve Cram to obtain useful training tips and ideas from other successful athletes in his area such as Brendan Foster and Jim Alder. But it was together, over many years, that they worked to perfect the training ideas which led Steve to such success on the track and it is these ideas that I have attempted to explain below.

3. Periodisation

Since the beginning of his athletic career, Steve Cram has always adopted a single periodised year. The British autumn and winter have been endurance based with his track season in the summer. He has never focused on an indoor season. The main aim of the year is to be at a peak of fitness for the major Championships each Summer.

Each year can broadly be split into five periods. (NB the periods of training given below are approximate in length and have varied from year to year to accommodate any loss of training which may have occurred or areas of training which were felt to require additional work.)

4. Period 1: Endurance October to February (22 weeks)

This is a basic conditioning period with the main aim of achieving a high level of aerobic fitness by the end of February.

After an initial 2 - 3 week build-up in mileage during October, Steve would gradually approach a maximum weekly mileage of 80 miles, although the average during this 22 week period may approximate to 60-70 miles per week. During the winter of 1983/84, Steve did go as high as 120 miles in a single week but believes that this increase was not beneficial to him. Another major reason for restricting his winter mileage to these lower levels was the advice given to him in 1984 by the doctors who diagnosed compartment syndrome in both legs.

The training detailed in Fig 3 is for a typical week during this period. None of the above running could be considered as 'slow'. Even morning runs are inside 6 minutes per mile. All of the evening runs

Fig 3: Typical Training Week : October to February

Mon	am	4-5 miles
	pm	5-8 miles group road run
Tue	am	4-5 miles
	pm	5-8 miles group road run
Wed	am	4-5 miles
	pm	5-8 miles group road run
Thurs	am	4-5 miles
	pm	5-8 miles group road run
Fri	rest or 5-8 miles easy	
Sat	Competition or 8-10 miles competitive group session	
Sun	10-14 miles	

Monday to Thursday are in the company of other club colleagues and often incorporate surges and an acceleration of pace during the final 2 miles to well inside 5 minutes per mile.

Although orthodox hill repetition sessions are never included, all of the evening runs do include hills of varying types. These range between 150-500 metres in length and would be run fast by the group. The quality of these surges can in part be determined by the standard of the athletes who regularly participated. Over many years, these have included Mike McLeod, Paul Cuskin and David Sharpe.

Although, as explained, the morning runs are at an average pace of no slower than 6 minutes per mile and the evening runs are faster, Steve firmly believes in 'running as you feel'. If he was particularly fatigued, he would either slow the pace of a run and even occasionally miss a training session completely. In other words, recovery is as important as the training itself. At no stage during this 22 week endurance period does Steve Cram train on a track and neither has he adopted any specific strength training sessions in the past.

Since Steve has been restricted to relatively low weekly mileages, he only usually requires one complete rest day during a 2-3 week training period and prefers a cross-country or road race on most week-ends.

A number of these, such as the Team Valley Relays, 2 to 8 miles in length, have acted as an excellent benchmark of his endurance condition comparing his performance with that of other local top class endurance athletes such as Charlie Spedding, Mike McLeod and Brendan Foster.

How Steve Cram Trains (3)

It is interesting to note that in February 1985 prior to his best ever track session, Steve achieved his only win in the North of England Cross-Country Championships.

Although the basics of Steve's winter training have been outlined, it is worth mentioning that, when appropriate, he has spent many weeks of various winters training in warmer parts of the world. Over the years, trips to Australia and Florida have offered useful breaks during cold British winters.

5. Period 2: Altitude March (3 weeks)

In most years during the period March - April, Steve has trained in Boulder (USA) at an altitude of 5,500 feet for a period of three weeks. After an initial short acclimatisation stage, training would be little changed from that previously described with the emphasis on endurance.

This period is considered the final foundation stone of his endurance condition. Steve also did stress that his visits to Boulder were not solely for an altitude effect but for a change of training venue, a stimulating and psychologically uplifting experience. It was important to return from Boulder suitably recharged and fresh to approach his pre-competition training with renewed determination.

During his three week stay, Steve may compete in a 5K and 10K road race as a form of competitive session and would also possibly attempt his first track training session of the year.

6. Period 3: Pre-competition Late March-May (9 weeks)

During this period, weekly mileage is reduced slightly as the intensity of major training sessions is increased. Tuesday and Thursday evening training sessions are transferred to the track and Saturdays are either group training sessions or road race competitions.

6.1 Road Races

As previously described, the road races vary from two mile relays, such as the annual Elswick Relays, to ten miles such as the Brampton-Carlisle which Steve has run in 48:10. These are all considered as excellent gauges to the progress of winter training.

6.2 Saturday Training Sessions

If not racing on a Saturday, training is usually always performed on hilly park land during the period late February to May. This incorporates various surfaces from paths, steps and grass and involves a major speed endurance session of 60 minutes duration with a gradually increasing pace as the session progresses. This training session is usually always performed with other good class athletes and is considered high on the 'difficulty' scale.

Fig 4: Saturday Training Session Late Feb - May

1,600m jog, 1,600m fast, 1,000m jog, 1,000m fast, 1,000m jog, 1,000m fast

\+ 600m jog, 400m fast, 600m jog, 400m fast, 600m jog, 200m fast.

\+ 200m slow, 200m fast.

\+ 4 x 150m hill (jog back recovery)

\+ 6 x 60m hill (turn around recovery) down hill fast

In pre-competition terms, this session has much to offer in terms of endurance and a graduated increase in pace. Since fatigue factors are high, Steve states that the psychological consideration of the efforts reducing in length as the session progresses is important for him to dwell on.

6.3 Tuesday and Thursday Track Sessions

During this pre-competition period, track training sessions involve repetition distances varying from 200 to 800 metres. In broad terms, recoveries are calculated as 15 seconds for each 100 metres of repetition effort e.g. for 200m repetitions the recovery would be 30 seconds and for 600m it would be 90 seconds.

Both Jimmy and Steve believe that these speed endurance factors are the most important aspects of training for middle

Fig 6 : Typical 14 Day Training Plan : late March - May

	am runs		major pm sessions		
	distance	pace	volume	type	pace
Monday	4 miles	5½ - 6 mins / mile	6 miles	OBLA	av 5 mins / mile
Tuesday	4 miles	5½ - 6 mins / mile	6 x 800m	speed endurance	3k
Wednesday	4 miles	5½ - 6 mins / mile	6 miles	OBLA	av 5 mins / mile
Thursday	4 miles	5½ - 6 mins / mile	10 x 400m	speed endurance	1500m
Friday	4-6 miles	5½ - 6 mins / mile			
Saturday			5,000m	road race	5k
Sunday	8-10 miles	6 mins / mile			
Monday	4 miles	5½ - 6 mins / mile	6 miles	OBLA	av 5 mins / mile
Tuesday	4 miles	5½ - 6 mins/ mile	8 x 600m	speed endurance	3k
Wednesday	4 miles	5½ - 6 mins / mile	6 miles	OBLA	av 5 mins / mile
Thursday	4 miles	5½ - 6 mins / mile	10 x 400m	speed endurance	1500m
Friday	4-6 miles	5½ - 6 mins / mile			
Saturday			60 mins	speed endurance	400m - 1500m
Sunday	8-10 miles	6 mins / mile			

How Steve Cram Trains (4)

Fig 5: **Typical Tuesday and Thursday Track Sessions**

	APRIL	MAY	JUNE
Tuesday	6 x 800m (2 mins recovery) run in 2:05	6 x 600m (90 secs recovery) run in 92-93	6-10 x 400m (60 secs recovery) run in 57-58
Thursday	10-12 x 400m (60 secs recovery) run in 60 secs	10-12 x 300m (45 secs recovery) run in 41½ secs	10-12 x 200m (30 secs recovery) run in 26-27 secs

distance competitions. During this period of training, no sessions are characterised by longer recoveries.

A progression in the quality or speed of training during this period is achieved by a gradual reduction in the volume of these major sessions as shown in Figure 5 where typical sessions performed in June are also described.

Steve believes it is essential that the pace of the above Tuesday and Thursday track sessions are controlled very carefully. Too fast in the early stages results in the final repetitions deteriorating in time. Too slow in the early stages and the training effect of the session is under-valued.

After many years of practice, he has such control that each repetition can be slightly faster than the previous one with the last repetition the fastest of the evening's training.

This is the manner in which many major championship 1,500m finals are run and it is this aspect of increasing pace under conditions of fatigue which short recovery sessions such as those described are meant to stimulate.

6.4 Monday and Wednesday Evening Sessions

The nature of the Monday and Wednesday evening training runs during the period March to May is maintained from the previous winter period. Although the length or volume of the runs is reduced to 5-6 miles, the average pace is maintained at 5 mins per mile. This could be referred to as an OBLA (onset of blood lactic acid) type of run.

Apart from the Saturday mixed pace training session, few of Steve Cram's individual sessions, when viewed in isolation, could be termed as 'World Class'. When viewed throughout a typical two week period, the true scale, in terms of volume, intensity and the number of demanding training sessions i.e. 10 in 14 days, can be classified as truly 'World Class' as shown in Fig 6.

When you consider that Steve Cram rarely requires rest days during this period of training, it obviously suggests that he recovers from training remarkably quickly. Looking back on his career both Steve and Jimmy agreed that no single year's training was identical to any others during this critical pre-competition period.

They have constantly changed and altered the programme for reasons of variety although, as previously mentioned, the training already described, is typical of what was performed.

The Tuesday and Thursday training has been performed over many years and could be termed as 'key' sessions for Steve Cram. Steve and Jimmy have found that the average pace maintained for a session of 10 x 400m (60 secs recovery) correlates very closely with that achieved by Steve in a 1 mile race.

7. Period 4 : Competition June - August (15 weeks)

The main aim for a season is always to be at a peak of form for a major Championship. Careful planning of competitions and training during the period June to August is, therefore, all important.

Steve usually starts his track racing season in June with two 3k races in the region of 7:45 / 55 and in earlier seasons, these would be tactical competitions

JIMMY HEDLEY

A few facts and items of additional information concerning his ideas and involvement with Steve Cram are listed as follows:-

- Date of birth 9 March 1927.
- Was an active athletics competitor between the ages of 11 and 55 years.
- Competed mainly between 100 yards and 440 yards at county level with pbs of 10.4 secs (100yds), 22.8 secs (200yds), 51.0 secs (440yds) and has also run 10 miles (road) in 54 mins aged over 40 years.
- Heart problem, a family inherited complaint, curtailed his own competitive athletic career in 1982.
- Began coaching in 1964.
- Jimmy is a highly competitive individual and believes very strongly in passing this on to his athletes. He often emphasises this aspect of the Sport in particular training sessions but always sets goals for his athletes that he knows are achievable.
- His particular source of satisfaction as a coach is to bring an athlete through from a young age to be a successful senior competitor.
- He treats all of his athletes as individuals and encourages them to think for themselves. A vital quality if they are to be winners.
- He is not over selfish about his own athletes and encourages them to seek occasional ideas and advice from other high athletic achievers in his own area.
- Enjoyment of the Sport and of training are the most important aspects for the young athlete.
- Jimmy believes that an athlete is ready to commence training twice per day in the age-range 18-21 years. The exact timing depends on the individual and can only be determined accurately by the personal coach who supervises training.
- For the reasons given above and others of detailed attention to an athlete's needs at any point in the training cycle, Jimmy has never coached by correspondence.
- Even during Steve Cram's early years, Jimmy realised that his strengths were endurance and speed endurance. Basic natural speed was never one of Steve's main assets. Consequently, training has been designed to work to Steve's strengths.
- Jimmy strongly believes that speed endurance track sessions should be kept simple. They are more difficult to control if overcomplicated with many difficult repetition distances and recoveries on any one night.

How Steve Cram Trains (5)

Steve CRAM

Born:	14 Sept 1960, Gateshead, England
Height:	1.86m
Weight:	69.0kg
Status:	Married

PERSONAL BESTS

400	49.1	15 Aug 82	Durham
800	1:42.88	21 Aug 85	Zurich
1,000	2:12.88	9 Aug 85	Gateshead
1,500	3:29.67	16 Jul 85	Nice
Mile	3:46.32	27 Jul 85	Oslo
2000	4:51.39	4 Aug 85	Budapest
3,000	7:43.1+	29 Aug 83	Crystal Pal
5,000	13:28.58	3 Jun 89	Jarrow

MAJOR HONOURS

800 m: (1) Commonwealth Games '86
(3) European Champs '86
qf Olympic Games '88

1500m: h Commonwealth Games '78
(8) Olympic Games '80
(3) European Cup '81
(1) Commonwealth Games '82
(1) European Champs '82
(1) European Cup '83
(1) World Champs '83
(2) Olympic Games '84
(1) European Cup '85
(1) Commonwealth Games '86
(1) European Champs '86
(2) European Cup '87
(8) IAAF World Champs '87
(4) Olympic Games '88
(5) European Champs '90
sf IAAF World Champs '91
sf IAAF World Champs '93

PROGRESSION

	800m	1500m	Mile
1994		3:42.8	
1993		3:35.63	3:52.17
1992		3:42.24	3:58.7
1991		3:34.18	3:52.11
1990		3:33.03	3:53.99
1989	1:46.37	3:35.3	3:51.58
1988	1:43.42	3:30.95	3:48.85
1987	1:45.31	3:31.43	3:50.08
1986	1:43.22	3:30.15	3:48.31
1985	1:42.88	3:29.67	3:46.32
1984	1:46.0	3:33.13	3:49.65
1983	1:43.61	3:31.66	3:52.56
1982	1:44.45	3:33.66	3:49.90
1981	1:46.29	3:34.81	3:49.95
1980	1:48.41	3:34.74	3:53.8
1979	1:48.5	3:42.5	3:57.03
1978	1:53.5	3:40.09	3:57.43
1977	1:56.3	3:47.7	
1976	1:59.7	4:07.1	
1975	2:07.1	4:13.9	
1974	2:11.0	4:22.3	
1973		4:31.5	

without pacemakers. Subsequent 800m and 1,500m races would then be planned along with training to give a positive progression in times.

Prior to a major Championship, this would ideally have encompassed two fast 1,500m races, three to four fast 800m races i.e. in the 1:44 region and two 1,000m races in approximately 2:16.

During this 15 week competition period, Steve would train on the track twice per week and would engage two to three morning runs of reduced mileage. Many of Steve's evening road runs are still maintained at 6 miles and again, can average 5 min / mile pace i.e. they are OBLA sessions. Although at this stage of the season such runs could be considered as of endurance maintenance value, they are run exceptionally fast.

If preparing for an 800m race on a Saturday, Steve would train on the track on the previous Monday and Wednesday. On the Monday evening this would be 10 x 300m (45 secs recovery) run in 41.5 secs and on a Wednesday, 600m (3 min recovery) plus 6 x 200m (30 secs recovery). The 600m would be run at 800m pace i.e. 77 secs and the 200m efforts at a similar pace. Once again, both of these sessions could be considered of the speed endurance type, one at 1,500m pace and the other at 800m race pace.

As can be seen in virtually all of his track sessions and his evening road runs, Steve runs to his strengths i.e. endurance and speed endurance. *There is no place in any of his training for what could be termed 'long recovery' sessions.* This he believes should also be the case for any aspiring middle distance athlete of his type. On the Thursday and Friday runs prior to his 800m competition, the pace is very much more reduced than usual.

It is during June and July that Steve has run various 1000m competitions. These are usually in major UK meetings and they have often been utilised as competitive training sessions where he has aimed to run a fast final 200m in preparation for major tactical competitions.

Many of these have been run in approximately 2:16 but with the final 200m in a 'confidence boosting' 24 or 25 seconds. Occasionally, Steve has not won such a race, but he has achieved his desired aim. In such races, he has also learned that when running very well, you can make errors of race judgement due to over confidence factors and a lack of consideration of poor positioning.

For obvious psychological reasons, Steve only ever truly eases down for one (i.e. a major Championships) or two competitions during a season. These competitions are different and have to be considered as such and prepared for in a non standard manner.

Preparing for this phase would commence seven days prior to the start of the competition. During these seven days, Steve would again train twice on the track:

Session 1: **8 x 200m (60 secs recovery) in a controlled 25-26secs.**

Session 2: **2 x 400m (2 mins recovery) plus 6 x 200 (walk back recovery)**

Again these sessions are run in a controlled fashion, accelerating towards the end of the 200m efforts.

During the two days, immediately prior to the commencement of his major competition, Steve would run no more than 3 miles only each day or would possibly even take a complete break.

Although pure speed sessions are occasionally performed in training, they are kept to a minimum due to the lower level of return from the investment in this type of training. Even when performing this type of session, the recoveries measured by conventional standards are kept to a minimum, e.g. 8 - 10 efforts of 150m sprints may only have a 250m jog recovery.

8. Period 5 : Rest and Recovery September (3 weeks)

At the end of his Summer racing campaign, Steve prefers to take three weeks of active rest.

This may be incorporated into a holiday, where he would participate in a low key manner in other sports. He also may take occasional short runs to ensure that he does not cause an injury on his return to more serious training.

Editor's note : we are very grateful to Steve Cram and Norman Poole for allowing the BMC News *to print this article for the first time anywhere in the world, and trust that other journals will respect the copyright of the authors.*

Peter Coe and Frank Horwill

An interview for the 1990's

Within a few days of the last BMC News *being published, the Editor was summoned to explain himself: "Why did you publish those articles by Labuschagne and McCausland?" stormed Peter Coe. "Come round and Frank and I will explain what we think is wrong with them."*

It is a great honour, but why have you called me here tonight?

Horwill: Peter and I do not like articles in the *BMC News* which are critical about a training method which helped contribute to a British athlete breaking 12 world records in 4 years and in particular, which has helped keep two of those records for a decade and a half. Similarly, for the record, Britain's sole gold medal in the men's middle-distance events in the Commonwealth Games was gained by Rob Denmark, a multi-tier trained athlete, and Tim Hutchings, whom I coached from age 16 to 26, is the only British male to win two WCCC medals for years.

In the last few months, there seems to be an uprising of opposition to the Five-Pace Theory. Before we discuss specific points, can each of you explain what precisely you mean by *Five-Pace* or *Multi-Tier* training?

Coe: A series of schedules designed to build plenty of endurance plus raw 400m speed which is repeatable and sustainable.

Horwill: The basics of five pace training are simplicity in the extreme:-

i train at race pace
ii train faster than race pace
iii train a little slower than race pace

So, if you are a 1,500m runner aiming at 4 minutes (64 secs per 400m), you do, for example, 6 x 500m in 80 secs with half-distance jog recovery (2 mins). This is race pace. Faster than race pace is 800m speed, e.g. 4 x 400m in 60 seconds with 400m jog recovery (3 mins). Slower than race pace is 3k speed, e.g. 8 x 800m in 2:16 with a quarter distance jog (200m, 90 secs). It will be noted that:

i the athlete during the course of one week is doing 400m in 60 seconds, 400m in 64 seconds and 400m in 68 seconds.
ii the recovery times for these different speeds is not the same. At 1,500m pace the jog is *half* the distance of the rep. At 3k pace the jog is a *quarter* of the distance of the rep, and at 800m pace the jog is *equal* to the distance of the rep.

Coe: Multi-tier training is based on three main elements:

i Meaningful 5,000m sessions that allow you to run at your best pace to increase VO_2max.
ii Short recovery 200s, 300s and 400s teaching you how to combat acidosis and allow you to run anaerobically.
iii Variations on these sessions allow you to cope with just about any situation you care to cover.

Horwill: Peter has described multi-tier training as 'all embracing'. For example, 5k and 3k pace work provides endurance for the 1,500m, the 1,500m pace work builds up speed-endurance for the 800m, and the 800m pace work builds up speed-endurance for the 400m.

But, the 400m speed work improves your 800m speed. The 800m pace work provides speed for the 1,500m, the 1,500m pace work provides speed for the 3,000m, which is turn provides speed for the 5,000m.

The term 'all embracing' is very apt.

Have recent articles in the *BMC News* have communicated the essence of the theories?

Horwill: Apparently not. Otherwise coaches would not write in condemning the method when they have not yet produced a world-class athlete by their own methods. There is a great interest in multi-tier training abroad. I have coached in 17 countries, and in each I have made converts to the method. Recently in South Africa, a miler after six weeks ran 3:57.7.

Coe: Pretty well, but maybe they don't stress quite how individualistic and diagnostic the sessions are. They will reveal weaknesses in particular areas early enough for the emphasis in the training to remedy any specific shortcoming, i.e. any session at one of the paces that proves to be difficult is where the extra remedial work is required. Five pace training not only enhances performance over a wide spectrum but is a good aid to monitoring all round progress. I don't think the magazine has stressed enough how the sessions progress throughout the year.

Now then, something I know causes some confusion. Frank devised *Five-Pace Theory*, and Peter devised *Multi-Tier Training*. Could one say: "The five-pace theory is essentially a summer schedule. Multi-tier training converts the five-pace theory into the complete solution."?

Coe: Not really. It is what it is, a theory. Don't think of it as a schedule, there is nothing rigid about five-pace training. The theory is the base on which to build the sessions which supply the required pace training. It is not a collection of immutable intervals and recoveries.

Multi-tier training provides the principles, but not identical sessions, for use at any time in the year. These speeds, times and density (i.e. how frequently) change with the individual athlete's development. Progressively you raise the athlete's condition whilst not entirely neglecting speedwork at any one time.

For a period, say in the worst part of winter, one might select only 3 or 4 paces at which to train, and at a slightly lower intensity. Fast running up short hills would fill the requirement of faster track work.

Horwill: I too would disagree with the statement about five pace theory being only a summer schedule. I obviously modify it during the winter, but as I have coached at least one cross-country international every year since 1963, I think it has had some success as a winter schedule! Peter of course enhanced it further for Sebastian.

Coe: As an example, you will recall that each winter or early spring Seb used to run one or two 3,000m indoors. Well one year, he got turned over by Dave Lewis. Clearly something was not quite right, so I tinkered around a bit, changed a couple of sessions, and a few weeks later Seb was able to get his revenge.

***Peak Performance* have regular articles about improving the VO_2max, presumably on the basis that improving the VO_2max is the way to improve middle-distance performance. Is this consistent with the 'Five Pace Theory?**

Horwill: Yes, it has taken 'experts' twenty five years to reach the same conclusions that I did back in 1969! Cooper, Daniels, Costill and Anderson are all agreed that the most efficient way to improve your VO_2max is by running between 80% and 100% of VO_2max. For the 1,500m runner, three of the five paces fall into those bands.

Coe: It is not inconsistent, but it is too simplistic. Your VO_2max must be 'good enough' i.e. 75ml/kg. But once you have reached that level, the traditional ways of improving the VO_2max are mileage heavy. In my view, for the 800m, an event only lasting $1^3/_4$ minutes, more value can then be gained from speed-endurance work (120% VO_2max - 800m pace).

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Could you explain what other physiological principles the theories are based upon?

Horwill: In simple terms, raising the VO_2max, and raising the lactate threshold. The drills I make athletes do help to improve running economy.

Coe: I think the principle of vaccination against disease is fairly well accepted. The same principle underpins training methods, we are vaccinating against sustained high speed. An improvement in ability is the body's response to correctly applied stimuli. For instance, if you want to develop or enhance sprinting ability, the mental templates controlling neuro-muscular co-ordination have to be learned, i.e. stimulated. If muscles are to be 'taught' to use preferentially fat rather than glycogen (carbohydrates) then long runs of at least 16 miles (25k) are required for this type of stimulus. Similarly if an athlete wants to survive a flood of acidosis, as in a world class 800m or 1,000m, then very fast, short-recovery 300m and 800m reps are the key. In short, you develop only what you train, and specificity is at the heart of good training.

But why did you choose five paces? Why not six, or four? Why choose the two above and two below racing pace?

Coe: Five paces is quite adequate. How would you pick six? By all means go down to four in the winter - indeed it is logical to do so. By going above and below race pace you cover all eventualities.

Horwill: It doesn't *have* to be five paces. The 800m runner can get by on three, the 1,500m runner on four, but five is preferable.

Coe: Let's get this one sorted out!!! As I said earlier, I believe that all runners need the five paces, from 800m to 5k, but with differing emphases.

Glen Grant has been doing much work monitoring pulse rates during sessions. He seems to feel that most of the five pace sessions are too fast, i.e. above the lactate threshold, that athletes can't complete sessions, and this leads to breakdown. He still proposes five paces, but suggests one above and three below, as well as the racing pace itself.

Horwill: Grant is one coach I listen to, and indeed the Americans favour his method, but physiologically the pulse rates for regularly performed 1,500m and 800m pace should not be too high.

Coe: If you believe in vaccination against disease, then you must believe in the vaccination against sustained high speed. If you can't complete the session, then the reps *are* too fast. However, that is not because the theory and the 'pace' is incorrect, just that you have misjudged your current potential at that distance. For example, say you are an 800m runner, with a best of 1:50. That doesn't mean that your 800m pace sessions must always be at 55 secs per 400m, winter or summer! If you are only in shape to run 1:56, then set your reps at 58 secs per 400m.

However, taking the vaccination analogy further, just as some patients react badly to certain injections, I do accept, however, that a few athletes might react badly to sustained high speed day after day.

Peter, in *Training Distance Runners*, page 135, you state that aerobic conditioning is the "primary means of cardiovascular adaptation to running". Grant would say that you have to strike a balance between this and the five pace work, and allow time for recovery. How do you judge how much five-pace work is enough, and how much is too much?

Coe: I think that any confusion that may exist comes from a too narrow interpretation of the phrase 'primary'. It is 'primary' only in that it produces a good return for the minimum amount of work that it demands. It is also 'primary' when an athlete first commences running or starts up again after a long layoff. The fact is that when good and properly trained athletes start doing *all* their work, and this includes distance work, at much faster paces, this makes a far more significant contribution to improving VO_2max. My slogan has always been "If speed is the name of the game, then never get too far away from it".

Why then do you think that the Five-Pace Theory and Multi-Tier Training is receiving criticism now, after a year in which the top British men could only manage 1:46.13 and 3:35.32 for 800m and 1,500m respectively. Surely the problem is that people aren't using five-pace training sufficiently?

Coe: If these coaches were producing athletes who ran 1:42 at age 22, 1:41 at age 24, and who could still run 1:43 at age 33, then I would concede that they had a point. But where is the progress? 17 years ago we were running 1:46 / 47 indoors. In what should have passed for a high class indoor 800m in the international against France, we struggled to a 1:48. Look at the decline in 1,500m ranking times, and at the other end, who are our Cross-Country threats?

Horwill: They laugh at Britain abroad. The call us "The land of Dope and Glory". They say we are 'know-alls' who produce 'bugger-alls'.

Coe: Just to jog peoples memories further, Seb had a 'bad year' in 1985. He had back trouble and a couple of niggling injuries throughout the year, and there were no major championships to get motivated for. He ran 1:43.07, 3:32.13 and 3:49.22, and wasn't ranked number one in the UK for any event!

Horwill: British women are showing good potential at the moment, but the men have not got their racing programme right. In 1994, two leading 800m runners with 1:46 (53 secs per 400m) did not break 3:49 for 1,500m (61 secs per 400m) last year. It is clear that they lack endurance. Similarly four of our leading 1,500m runners with times around 3:36 (58 secs per 400m) did not break 1:48 for 800m (54 secs per 400m) in 1994. It is clear that they lack speed.

But this is 1995! I shouldn't have to still be saying the same fundamental things I said 25 years ago! People have criticised the *BMC News* for saying the same things issue after issue. It appears they still need to be said. Last year only two male athletes made the top 50 over 800m, 1,500m and 5,000m - Ian Grime (1:49.10 / 3:40.35 / 14:08.31) and Paul Freary (1:50.5 / 3:45.3 / 14:10.76). Both of them have been BMC members for years!

McCausland states critics say that the five-pace theory leads to "even-paced tired athletes". Apparently it is "not geared to the type of race that took place in Barcelona". How do you respond to that?

Horwill: Nonsense. Why quote Barcelona? We had no one in the finals! If we ignore the five pace principles we won't get any in the next Olympic final either.

Coe: Let's not get too semantic here, but how can training at five different paces possibly lead to an 'even-paced' runner? The whole idea is that we are trying to develop repeatable speed. Are they trying to get me to say that athletes did not finish my sessions tired? Well of course they were tired - the whole point is that we are trying to overcome the effects of acidosis,

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i.e. teach the athletes to 'buffer' so that they can still keep running fast even after lactate has built up.

Horwill: Was Seb Coe an "even-paced tired" runner? Did Rob Denmark win his 5k gold medal with an "even-paced tired" sprint? If this is what the critics say, then they are morons! Surely they can come up with something better than that.

David Iszatt has recently said that many young athletes find single distance sets "incredibly boring". He finds "Bowerman" sets, i.e. single-pace, multi-distance, keep their interest and are more effective at teaching pace judgement. Would you be happy at such an approach?

Coe: What session can possibly be so interesting that the athlete wants to continue after the session has finished? My view is that the art of becoming a champion is the art of conquering boredom, and that training is only as boring as the coach makes it.

Horwill: Critics of multi-tier training who say the sessions are "boring" should note what Zatopek said when he was asked "Don't you get tired and bored doing 20 x 200m, 40 x 400m, 20 x 200m *every day*. He replied, "I'm too busy thinking about getting fit to think about getting tired and bored". Having said that, I think it is a refreshing change to vary the distances of a set pace in one session, for example a 3k session (8:00 = 64 secs per 400m) could be 1 x 1,600m in 4 mins with 3 mins recovery, 1 x 1,200m in 3:12 with 2¼ mins rest, 1 x 800m in 2:08 with 1½ mins rest, and then 1 x 400m in 64 secs. However, Jimmy Hedley, coach to Britain's fastest miler, has stated that his athletes prefer reps of the same distance.

David finds it difficult to construct an effective five-pace schedule for athletes who attend the track only twice a week for 'club sessions'. He has therefore developed a 'three-pace plus one OBLA' week approach. What penalties would you see for this?

Horwill: Obviously I believe that five paces are better than three, and you must always be careful not to neglect your 5,000m session. You can always achieve five paces by using fartlek sessions and manipulating the recovery jog, e.g. 5k pace - 4 x 4 mins with 60 secs jog recovery; 3k pace - 6 x 3 mins with 2 mins jog; 1,500m pace - 5 x 90 secs with 2 mins jog; 800m pace - 4 x 60 secs with 3 mins jog. It takes ingenuity to implement multi-tier training with a group. If it cannot be done, have separate training days for different groups, even if it means going to the track six days a week.

Coe: The confusion here seems to be one of choosing priorities. It depends on which hat the coach wants to wear. If it is the BMC hat, then it is an elitist one, and is thus highly selective. If it is that of the club coach, then you are always going to be somewhat restricted by the lower standards of some members in the group you inherit. If you are dealing with a disparate group of unequal ability, you can devise sessions using relays and paarlaufs which stretch both the stronger and the weaker athletes, but ultimately you have to devise the sessions to stretch the stronger athletes, and tell the weaker ones to do the best they can.

What are your criticisms of the Labuschagne article?

Horwill: When I can produce two better females than Labuschagne, then will I criticise him!

Coe: I share Frank's sentiments here, but from a technical viewpoint I am unable to take Labuschagne's article too seriously. First of all he uses the phrase 'four-tier'. I am unable to distinguish any tiers at all in what he proposes. A cycle repeated over four weeks, yes, but hardly four tiers.

My multi-tier method is designed to prevent developing the kind of athlete that is locked into one pace, and there is nothing in Labuschagne's article that leads me to believe that it will produce anything other than a single-paced athlete. It is unfortunate that the two athletes he quotes are classic examples of one-paced runners. I do not dispute their ability to run a fast time, but they showed no ability to produce changes of pace and fast finishes.

Contrast those athletes to our own Yvonne Murray, who with a far inferior pb over 10,000m, left Meyer standing on the last lap to win the gold medal at the Commonwealth Games. Yvonne has decent pbs of 2:00 for 800m and 4:01 for 1,500m. Who amongst our current crop of male 10k runners could contemplate running 1:48 and 3:36, except perhaps our own BMC man Rob Denmark?

What do you think of Labuschagne's idea of one week in four being a rest week? Is it the same idea behind Crash Training?

Coe: Not a lot. It is my firm opinion that throughout the training year, great attention should be given to applying the correct recovery between sessions, within sessions, and between the hard days and the not so hard.

Horwill: Labuschagne's training plan is not new - I was advocating a 4-week cycle in 1969 and the French academy of Sports Science advocated a version of it in 1961 on a day-by-day basis. It is definitely a form of crash training because the active rest week permits super-compensation, but you have to decide which athletes can take it and those who can't. Obviously Budd and Meyer did not crumble!

How would you, if at all, adapt the Five-Pace Theory to the requirements of the nineties?

Coe: I would not adjust the theory. The theory is either right or wrong - and I happen to believe that it is right. What is for discussion is the way in which it is applied throughout the year, and this application can clearly vary according to the athlete and the time of year.

Horwill: I would introduce tactical training sessions once a week. For example, in a 5k pace session of 3 x 1,600m, I would blow a whistle at some time during one of the reps to signal that the rest of the rep is to be done at 3k pace.

So, what final message would you have me send to your critics via these pages?

Coe: Learn to use controlled experiments with individual athletes. Educate them to explore these capabilities, persuade them to go to the limit sometimes, they may actually enjoy it and raise their sights. High fliers may do very well with tactical training but they must realise that it is only the icing on the cake, it is not a substitute for any shortcomings. Finally, there is all the difference in the world between informed criticism and whinging excuses. The best way is to find and start coaching one's own champions. That part of it is not up to Frank and I - we offer you the theory, use it or not as you please.

Horwill: I would tell them to stop being worms and join with us. Norman Poole has told me that *all* coaches use some of the five-pace theory. They might not use it all, and they might add a few ideas of their own, but fundamentally they *are* using it. I just wish that they would admit it, and then we can all work together. After all we are all on the same side, aren't we?

Achilles Writes ....

The most influential column in Athletics

ELLIOTT AND CRAM ON BOARD

Our cover this issue rightly shows two great champions, both of whom are giving up their time to help the current crop of athletes. Peter Elliott and Steve Cram both played active roles at the National Endurance Conference last November, and both intend to run in BMC races in 1995.

At the end of one of the lectures, *The Times* quoted Peter Elliott saying, with a look of genuine concern, "I think they are just frightened to go out there and make it hurt. It is frustrating to sit at home and see the decline - that is why I am trying to get back, because I want to start to try to turn things round. If there were three or four guys running 3:32 or 3:33 there would be no point. If they are not going to commit themselves when the gun goes, how do they expect to run fast times? I was prepared to go out there and take it on. Norman Poole puts BMC races on with pacemakers and they do not go with it. For all the stick I used to get, at least I had a go."

Elliott's views were echoed by Cram in a group discussion "You have got to start putting yourself in positions you are not used to. If that means putting yourself in front on the first lap, try it. You cannot wait for something to be laid on a plate for you." Later in a lecture Cram said "Too many athletes are frightened on the line, wondering what is going to happen. You have got to stand on the start of every race know what you are going to do."

Despite these strong words, the lessons did not seem to have hit home. When Steve Cram asked the assembled athletes "Which of you is going to win a medal next year?", only two athletes put their hands up, Alison Wyeth and Glen Grant. Alison got a medal in 1994, and Glen of course is 42 this year and is aiming at the World Vets Championships. As for our youngsters, not a single hand went up.

HONOURS

Wilf Paish has got over 100 athletes into the British Team in 40 years, but no New Year's Honours for him. Contrast this to a Welsh policeman who has been coaching children for ten years. He gets an MBE. What about the likes of Harry Wilson, Peter Coe and Jimmy Hedley?

Makes you wonder how these honours are judged, or rather, who is vetoing the nominations?

VALE FRED WILT

Fred Wilt, a great champion who became a great MD author, joined the BMC from a distance of 6,000 miles. He could see what we were trying to achieve. When he passed away recently he was given a cursory paragraph by Britain's leading athletics journal.

However, a certain media-made coach, who was paid for his efforts, actively discouraged his athletes from joining the BMC. When he died he was given five pages of laudation. Funny old world.

DIANE IS INNOCENT?

There are good reasons to believe that Diane Modahl has not been treated in accordance with natural justice.

She is being deprived of her income, despite her protestations of innocence, by a governing body that seems to Achilles to be more intent on getting 'a conviction' than the finding out of the truth.

The fact remains that anyone can see from her physique that Diane could not have been taking steroids on a regular basis, and it is not as if we had seen a significant improvement in her performances in the last two years.

The key words in the press after her appeal were "Diane Modahl failed to prove her innocence". Well, readers, sit down and think about this. How would *you* prove *your* innocence if you were accused of taking banned substances?

It is important therefore to go briefly through the very thorough case that was presented to the tribunal:

i There is no evidence that conclusively proves that the sample tested was Diane's.

ii There is no evidence that conclusively proves that no tampering took place.

iii There is no evidence that conclusively proves that the degradation of the sample through improper storage conditions did not affect the results.

iv There is no evidence that conclusively proves that the high ratio of testosterone to epi-testosterone which resulted from a virtual absence of epi-testosterone, *not* an unusually high level of testosterone, can only have resulted from the taking of a banned substance.

v Even if you accept points i) to iv) above as being proven beyond reasonable doubt, then is there any evidence that this banned substance *must* have been self-administered?

Achilles asks what other evidence could Diane possibly have presented to prove her innocence, or was she always going to be found guilty? We are not condoning cheats in any way at all, but it is far worse to condemn a person who, frankly, is probably innocent and is a victim of circumstance.

SILLY LITTLE MEN

A well known BMC official when asked about Diane exclaimed "I don't care if she's got three legs and comes from Mars - if she can run the time, she can run in our races! What right have some silly little men in Monte Carlo got to tell us who we can or cannot put in our races?" Extreme views, certainly, but maybe not too far from the true BMC ethos.

Achilles' more measured view is as follows: "Diane continues to insist upon her innocence. There is nothing in her previous character to suggest that she is in the habit of telling lies, ergo, she should be believed, and the case against her is therefore not proven. Let her run throughout 1995. By all means test Diane once a week throughout the season, but let her run and continue to earn her living."

EARLY LESSONS FROM 1995

In March, generous sponsors assisted the Junior Endurance Weekend at Stafford. The conclusions were:

i most of the latest crop of U20 athletes do not have the necessary basic stamina to cope with elementary aerobic sessions;

ii these same athletes seem to feel that they are talented enough to have some sort of 'divine-right' to train as they please;

iii those athletes who did not have enough energy to complete the sessions seemed to find enough energy to say up all night and keep everybody else awake.

A similar story emerged from this year's trip to Lanzarote. The disappointed sponsors feel that their generosity was taken advantage of. Those athletes involved, and they know that we know who they are, had better start learning some serious lessons very fast, or they will not receive any further race invitations or financial assistance from the BMC.

WORMS?

Frank Horwill was recently asked in South Africa "Do you agree that all coaches are worms?" Frank thought a moment, and replied "Yes - but I am a glow-worm!"

1994 UK Merit Rankings

by Peter Matthews

This is the 27th successive year that I have compiled annual merit rankings of British athletes. As usual they are based on an assessment of form during the outdoor season. The major factors by which the rankings are determined are win-loss record, performances in the major meetings, and sequence of marks. I endeavour to be as objective as possible, but form can often provide conflicting evidence, or perhaps an athlete may not have shown good enough results against leading rivals, or in very important competition, to justify a ranking which his or her ability might otherwise warrant. I can only rank athletes on what they have actually achieved. Much depends on having appropriate opportunities. It is obviously harder for an athlete living in a remote part of the UK than one who is close to the major centres of competition, and it may be hard to break into the Elite who get the invitations for the prestige meetings. Difficulties also arise when athletes reach peak form at different parts of the season or through injury miss significant competition. Once again it should be pointed out that the rankings are by no means necessarily the order in which I think the athletes would have finished in an idealised contest, but simply my attempt to assess what has actually happened in 1994. I hope that I have not missed many performances, but I would be very pleased to receive any missing results at 10 Madgeways Close, Great Amwell, Herts SG12 9RU. For each event the top 12 are ranked. On the first line is shown the athlete's name, then their date of birth followed, in brackets, by the number of years ranked in the top ten (including 1994) and their ranking last year (1993), and finally, their best mark prior to 1994. The following lines include their best six performances of the year (followed, for completeness, by significant indoor marks indicated by "i", although indoor form, the subject of a separate assessment, is not considered in the rankings). Then follow placings at major meetings, providing a summary of the athlete's year at the event.

Men 800m

1 **Craig Winrow** 22.12.71 (2y, 11) 1:47.5 '92
1:46.54, 1:46.91, 1:46.93, 1:47.06, 1:47.09, 1:47.15; 1 Wyth, 1 AAA, 3 ECp, 2 GhG, 6 TSB-CP, 1 v USA, 6 EC, 4 CG, 9 McD, 3 WCp

2 **Martin Steele** 30.9.62 (6y, 2) 1:43.84 '93
1:46.13, 1:47.09, 1:47.39, 1:47.56, 1:47.99, 1:48.04; 1:47.78i; 3 AAA, 3 Cork, 9 GhG, 6 TSB-Ed, 8 TSB-CP, 4 v USA, 7 CG

3 **Tom McKean** 27.10.63 (10y, 3) 1:43.88 '89
1:46.20, 1:46.28, 1:47.46, 1:47.99, 1:48.69, 1:48.71; 1:47.60i, 1:48.46i; 9 Helsinki, 11 Lausanne, 1 Scot, 5 TSB-CP, 9 Oslo, 6h3 EC, 8 CG

4 **Andrew Lill** 9.8.71 (4y, 6) 1:46.37 '92
1:47.00, 1:47.41, 1:47.52, 1:47.55, 1:47.80, 1:48.18; 2 Crawley, 1 IR, 4 AAA, 1 South, 3 GhG, 5 TSB-Ed, 7 TSB-CP, 3 v USA, 1 BL1 (4), 5s1 CG

5 **Michael Guegan** 19.9.66 (2y, 9) 1:47.90 '92
1:48.26, 1:48.90, 1:48.92, 1:48.95, 1:49.16, 1:49.45; 4 Wyth, 3 Crawley, 2 CAU, 5 AAA, 2 South, 1B GhG, 1 Belgian, 7h2 CG

6 **Terry West** 19.11.68 (1y, -) 1:48.2 '92
1:48.66, 1:48.80, 1:49.13, 1:49.31, 1:49.84, 1:50.3; 2 Wyth, 1 CAU, 6 AAA, 1 Nitra

7 **David Strang** 13.12.68 (2y, -) 1:45.85 '92
1:48.20, 1:48.25; 1:48.89i; 2 E Clubs

8 **David Wilson** 7.9.68 (1y, -) 1:48.19 '90
1:47.57, 1:49.39, 1:50.43, 1:50.50;
4h4 AAA, 1 NI, 2 K Lynn, 8s1 CG

9 **Curtis Robb** 7.6.72 (4y, 1) 1:44.92 '93
1:48.07, 1:49.56, 1:52.8; 7 TSB-Ed, 9 TSB-CP

10 **Anthony Whiteman** 13.11.71 (1y, -)
1:48.45, 1:49.16, 1:49.2, 1:50.4;
1 Kent, 2 Dublin, 3 South, BL4: 1,-,-,1

11 **Andrew Knight** 26.10.68 (0y, -) 1:49.3 '91
1:48.38, 1:49.21, 1:49.54, 1:50.4, 1:50.9, 1:50.94;
2 Kent, 3B TSB-CP, 1 Solihull, 1 Lough

12 **Paul Walker** 2.12.73 (0y, 12=) 1:47.53 '93
1:48.85, 1:49.5, 1:49.72, 1:49.79, 1:50.12, 1:51.5;
9 Wyth, 3h2 AAA, 2 Scot, 2B GhG, 4 K Lynn, 7B TSB-CP, BL2: 1,1B,1,1

Winrow, with a previous best place of 7th in 1992, reached the top, and thus fulfilled some of his junior promise. He had a fine competitive record, but he was top all too easily and it was a terrible year by the usually excellent British 800m standards. Last year I said that "the standard in depth was down considerably from our usual high levels, with the UK ranking tenth best being 1:47.59, much the worst since 1985, with the record level being 1:46.13 in 1988". Well the 10th ranking place in 1994 was 1:48.38 and that's the worst since 1980 and the best time of 1:46.13 would have been 10th best in 1988. Strang had just two races, both 1:48.2s and Guegan and West had solid seasons, but for 1:48 men to be ranked 5th to 7th shows the problems with this event, as compared to our glory days, all too clearly.

Women 800m

1 **Kelly Holmes** 19.4.70 (3y, 2) 1:58.64 '93
1:59.43, 1:59.92, 2:00.48, 2:00.63, 2:01.56, 2:01.80; 2 Helsinki, 3 GhG, 1 TSB-CP, 1 McD, 2 Madrid

2 **Ann Griffiths** 20.8.65 (4y, -) 1:59.88 '91
1:59.81, 2:01.29, 2:01.67, 2:01.86, 2:02.42, 2:03.49; 1 AAA v LC, 4 GhG, 5 TSB-CP, 5 EC

3 **Sonya Bowyer** 18.9.72 (1y, -) 2:05.85 '93
2:02.30, 2:02.92, 2:03.18, 2:03.79, 2:04.75, 2:05.92; 1 Crawley, 2 AAA v LC, 3 AAA, 5 GhG, 7 TSB-CP, 2 v USA, 5h3 CG

4 **Catherine Dawson** 9.3.66 (2y, 10) 2:03.55 '93
2:03.17, 2:03.20, 2:03.39, 2:03.81, 2:03.83, 2:04.13; 5 Wyth, 1 W v Sc,I,T, 1 Welsh, 2 WG, 3 v USA, 1 W v Sc,N, 4 CG, 5 McD, 7 WCp

5 **Dawn Gandy** 28.7.65 (5y, 8) 2:01.87 '88
2:03.75, 2:03.85, 2:04.38, 2:04.65, 2:05.35, 2:05.65; 2:05.28i; 3 Wyth, 2 Crawley, 2 AAA, 6 GhG, 3 WG, 1 Nitra, 5 v USA, 4h1 CG

6 **Jo Latimer** 30.1.71 (2y, 4) 2:03.65 '93
2:03.27, 2:04.05, 2:05.19, 2:05.9, 2:06.2, 2:06.7; 4 Wyth, 5 Crawley, 1 BL1 (2), 12 Helsinki, 1 K Lynn, 4 v USA, 4h2 CG, dnf McD

7 **Angela Davies** 21.10.70 (1y, -) 2:05.75 '93
2:03.67, 2:04.0, 2:05.21, 2:05.83, 2:06.94, 2:07.7; 2:05.69i; 1 UAU, 1 Dublin, 2 Belgian, 1 Solihull

8 **Lynn Gibson** 6.7.69 (2y, 5) 2:02.34 '92
2:03.54, 2:06.41, 2:07.2; 2:08.56i;
3 AAA v LC, 1 WG

9 **Helen Daniel** 24.10.63 (7y, -) 2:01.86 '87
2:04.32, 2:04.63, 2:05.60, 2:05.82, 2:06.71, 2:08.5; 3 Crawley, 4 AAA, 13 Helsinki, 6 WG

10 **Lynne Robinson** 21.6.69 (3y, -) 2:02.0 '89
2:04.7mx, 2:05.59, 2:05.60, 2:05.6, 2:06.1, 2:06.13; 4 Crawley, 1 IA, 7 AAA, 3 Cork, 1 TSB-Ed, 2 Lough, BL1: 2, ,2

11 **Vicki Lawrence** 9.6.73 (0y, -) 2:09.2 '93
2:04.69, 2:05.80, 2:06.12, 2:06.90, 2:07.05, 2:07.42; 1B Wyth, 1 Stretford, 2 IA, 3h3 AAA, 2 Scot, 2 TSB Ed, 1 North, 2 Sc v WN, 4 EU23Cp

12 **Paula Fryer** 14.7.69 (4y, 7) 1:59.76 '91
2:05.09, 2:05.3, 2:05.43, 2:05.9, 2:06.62, 2:07.2mx; 6 Wyth, 3 IR, 5 Cork, 5 WG, 2 North, 3 N v Sc,W, 1 Nth IC, BL1: -,1B,1

Not ranked but close

Michelle Faherty 10.8.68 (0y, -) 2:05.57 '92
2:05.38, 2:05.4, 2:06.5, 2:07.21, 2:09.23, 2:09.4; 2 Yorks, 2 Wyth, 5 AAA, 6 Cork, 10 Solihull

Linda Keough 26.12.63 (1y, 3) 2:01.82 '93
2:03.69, 2:05.44, 2:06.27, 2:07.57, 2:08.08, 2:08.86; 8 Crawley, 8 Moscow, 6 AAA, 8 GhG

Not ranked

(2) **Diane Modahl** 17.6.66 (10y, 1) 1:58.65 '90
1:59.85, 2:00.50, 2:00.50, 2:00.84, 2:01.13, 2:01.35; 1 BL1 (1), 1 Wyth, 4 Hengelo, 1 AAA, 2 Lisbon, 1 ECp, 3 Lille, 3 TSB-CP, 4 GWG, 6s2 EC

Holmes contended for the world top ten and was unbeaten by a British athlete. She is number one for the first time, the 16th woman to top the 800m lists in the 27 years of these rankings. The unfortunate Diane Modahl, who was top six times in the previous seven years, is unranked following her drugs disqualification. She was second to Holmes on her record. Griffiths, after a lucky qualification from last place in her European Championships heat, was a great fifth in the final and Dawson ranks for the first time at number four, just behind Bowyer, who was injured when she ran at the Commonwealth Games, and ahead of a closely matched group.

Men 1,500m / 1 Mile

1 **Matthew Yates** 4.2.69 (5y, 1) 3:34.00 '91, 3:52.75M '93
3:35.32, 3:35.61, 3:36.47, 3:37.82, 3:39.12, 3:39.60; 3 Lisbon, 12 Lille, dnf TSB-CP, 7 Nice, 5 Zurich, 7 Brussels, 8 Rieti, 2 Berlin, 4 GPF, 13 McD

2 **John Mayock** 26.10.70 (4y, 3) 3:36.45 '93, 3:56.90M '91
3:37.20, 3:37.22, 3:38.78, 3:39.17, 3:58.34M, 3:42.59; 3:40.98i; 4 Seville, 6 AAA, 5 TSB-Ed, 8 TSB-CP, 3 v USA, 3 CG, 1 McD

3 **Kevin McKay** 9.2.69 (4y, 9) 3:35.94 '92, 3:54.45M '92
3:53.64M (3:38.79), 3:37.86, 3:38.08, 3:39.72; 3:40.19, 3:40.59; 2 BL1 (1), 1 Hengelo, 1 AAA, 1

1994 UK Merit Rankings

E Carr, 1 v USA, 7 Dream M, 5h2 EC, 10 Zurich, 16 Brussels, 8 CG, 15 McD

4 **Gary Lough** 6.7.70 (1y, 12=) 3:40.48 '93, 4:01.54iM / 4:02.14 '92
3:35.83, 3:37.83, 3:41.71, 3:59.48M, 4:00.00M, 3:42.7; 1 Wyth, 3 AAA, 3 ECp, 3 E Carr, 3 CP-TSB, 11 EC, dq (3)s2 CG, 5 WCp, 6 McD

5 **David Strang** 13.12.68 (1y, 10) 3:39.72 / 3:56.86 '93; 3:36.53, 3:54.30M (3:38.55), 3:39.15, 3:39.96, 3:40.08, 3:40.85; 3:55.43iM, 3:57.38i; 2 AAA, 4 TSB-Ed, 6 TSB-CP, 9 Dream M, 7 Hechtel, 12 EC, 12 CG

6 **Brian Treacy** 29.7.71 (1y, -) 3:40.68 / 4:00.67M '90; 3:38.93, 3:39.65, 3:40.55, 3:40.63, 3:44.50, 3:46.34; 3:45.46i; 3 Granada, 3h1 AAA, 6 CG

7 **Andrew Keith** 25.12.71 (1y, -) 3:39.06 / 3:57.7iM '93, 4:03.57 '92;
3:39.44, 3:41.1, 3:58.97M, 3:42.93, 3:45.50, 3:45.6; 3:56.29iM, 4:00.55iM; 12 NCAA, 7 AAA, 6 Cork, 6 TSB-Ed, 4 v USA, 2 Newport, 6s1 CG

8 **Tony Morrell** 3.5.62 (5y, -) 3:34.1/3:51.31M '90
3:41.50, 3:42.45, 3:42.59, 4:01.06M, 3:43.81; 3:44.77i; 4 AAA, 3 Arhus, 6 E Carr, 7 v USA

9 **Anthony Whiteman** 13.11.71 (1y, -) 3:46.1 '93, 4:08.0M '92;
3:41.92, 3:42.18, 3:42.68, 3:44.56, 3:45.21, 4:03.87M; 1 AAA v LC, 5 AAA, 1B GhG, 1 WG, 13 TSB-Ed, 2 Nitra, 2 Belgian

10 **Matt Barnes** 12.1.68 (2y, 6) 3:38.31 '93, 4:03.24M '92; 3:40.47, 3:58.39M, 3:43.3, 3:43.89, 3:45.61, 3:49.7; 3 Wyth, 8 AAA, 3 Cork, dnf E Carr, 11 TSB-Ed, BL3: 1,-,-,1

11 **David Wilson** 7.9.68 (0y, -) 3:41.8 '89, 3:59.9M '91; 3:41.28, 3:43.77, 3:44.62, 3:46.86, 3:47.11; 1 Crawley, 1 Belfast, 4 BLE, 7s1 CG

12 **Ian Gillespie** 18.5.70 (0y, -) 3:40.72 / 3:58.64M '93; 3:41.48, 3:41.65, 4:00.80M, 4:01.58M, 3:43.8, 3:44.0; 3 BL1 (1), 5 Wyth, 2 Crawley, 4 Scot, 5 E Carr, 3 Newport, 3 Exeter, 4 Solihull, 9 McD, 11 Lough, 2 Cup

Not ranked but close

Ian Grime 29.9.70 (0y, -) 3:44.53 '92, 4:03.7M '90; 3:40.35, 3:44.03, 3:45.09, 3:45.57, 3:47.2, 3:48.87; 3 AAA v LC, 9 AAA, 2 Tallinn, 1 Solihull, BL1: 4B,-,-,2

Steffan White 21.12.72 (0y, -) 3:44.5 '93
3:41.02, 4:00.61M, 3:43.4, 3:44.37, 3:45.03, 3:45.53; 1B Wyth, 11 AAA, 2 AAA v LC, 4B GhG, 4 Mid, 2 Solihull, 8 McD, 3 Lough

Matthew Hibberd 23.6.73 (0y, -) 3:42.67 / 4:02.45 '93; 3:41.73, 3:42.5, 3:43.34, 4:02.36M, 3:45.2, 3:46.30; 3:43.23i; 11 Wyth, 10 AAA, 1 K Lynn, 5 Solihull, 11 McD, 1 Lough, 1 Cup

Rod Finch 5.8.67 (1y, 12=) *3:37.97i*/4:00.0M '93
3:38.80, 3:47.91; 3:43.80i; 2 Hengelo, 3h4 AAA

M = 1 mile time. Equivalents: 3:55.0m = 3:52.0M, 3:38.0m = 3:55.3M, 3:41.0m = 3:58.6M, 3:44.0m = 4:01.8M.

No one stood out so clearly as Yates did in 1993, but Mayock's Commonwealth bronze redeemed dismal performances by others in the major championships. Mayock also won at Sheffield. Yates ran twice in Britain - failing to finish at Crystal Palace and trailing in 14th at Sheffield. He had produced insufficient form in the Continental races that he contested to demand selection for the Europeans; however his fine 2nd in Berlin and 4th at the Grand Prix Final, with much faster times than Mayock, was enough to keep him top of the rankings and overall he ranked ninth in the world on my merit rankings. While these two ended well, McKay's form fell away badly and Lough did not fulfil his early season promise, in which he continued to finish third in every major race (adding UK and WSG from 1993). Strang was European Indoor champion and had a solid season to the Europeans, when he ran well to make the final but then trailed in last, a feat he repeated at the Commonwealth Games. Unnoticed (indeed never even mentioned by the BBC during the 1500m races) Treacy was Britain's second best at the Commonwealth Games and he had earlier run well in several races in Spain. The last few places were difficult to determine, with conflicting race results. Rod Finch had a 3:38.80 but then only a AAA heat run and Ian Grime beat many contenders at Solihull. It is the most inexperienced group ever in this event, with five years being the longest stretch in the top ten, but therein perhaps may lie hope for the future

Women 1,500m

1 **Kelly Holmes** 19.4.70 (1y, -) 4:17.3 '93
4:01.41, 4:02.52, 4:06.48, 4:07.57, 4:07.7mx, 4:08.86, 4:09.27; 1 AAA, 2 ECp, 4 Stockholm, 5 GWG, 2 EC, 1 CG, 3 WCp, 1 Plate

2 **Yvonne Murray** 4.10.64 (11y, 2) 4:01.20 '87, 4:23.08M '86
4:01.44, 4:22.64M (4:03.64), 4:04.19, 4:25.2M+, 4:12.47, 4:33.4eM; 2 AAA, 1 v USA, 2 Oslo

3 **Alison Wyeth** 26.5.64 (8y, 1) 4:03.17 '93, 4:24.87M '91
4:04.19, 4:05.65, 4:08.37, 4:30.24M, 4:31.83M, 4:14.62;
1 Crawley, 6 Granada, dns AAA, 2 Cork, 6 GhG, 7 Lausanne, 5 Nice, 8 Monaco, 2 Plate

4 **Lynn Gibson** 6.7.69 (2y, 6) 4:12.12 '93
4:05.75, 4:31.17M, 4:12.58, 4:13.89, 4:13.98, 4:14.08; 2 Wyth, 8 AAA, 1 Dublin, 8 GhG, 3 TSB-CP, 3 v USA, 10h1 EC, 9 CG

5 **Bev Hartigan** 10.6.67 (7y, 12) 4:05.66 '90, 4:26.52M '92
4:11.04, 4:31.26M, 4:12.46, 4:13.19, 4:13.69, 4:14.6; 1 Wyth, 3 Granada, 4 AAA, 9 GhG, 1 Wrexham, 4 TSB CP, 6 v USA

6 **Angela Davies** 21.10.70 (1y, 11) 4:15.35 '93
4:09.29, 4:11.27, 4:31.83M, 4:12.09, 4:14.23, 4:15.1; 3 Wyth, 2 AAA v LC, 5 AAA, 10 GhG, 2 Wrexham, 1 Nitra, 5 v USA, 6h2 EC

7 **Ann Griffiths** 20.8.65 (3y, -) 4:07.59 / 4:33.12M '92
4:08.71, 4:16.63, 4:18.0, 4:18.01, 4:20.2; 4:21.10i; 1 BL1 (1), 1 IA, 3 AAA, dnf Oslo

8 **Lynne Robinson** 21.6.69 (3y, 5) 4:12.03 '93, 4:32.91M '92
4:10.32, 4:12.05, 4:13.6, 4:18.22, 4:20.1, 4:20.18; 6 Wyth, 1 AAA v LC, dnf GhG, 1 TSB-CP, 3 Hechtel, 2 Solihull

9 **Sonia McGeorge** 2.11.64 (3y, 4) 4:10.75 '90, 4:35.7M '89
4:12.20, 4:33.12M, 4:14.80; 4:21.28i; 2 Crawley, 11 GhG, 2 TSB-CP

10 **Debbie Gunning** 31.8.65 (3y, 9) 4:12.69 '90, 4:32.32M '91
4:13.50, 4:14.13, 4:16.50, 4:17.3;
4 Wyth, 3 Crawley, 7 AAA

11 **Susan Parker** 24.3.70 (1y, 7) 4:12.3 '93
4:14.62, 4:15.42, 4:15.53, 4:37.82M, 4:24.3mx, 4:29.7; 4:24.70i; 9 AAA, 5 Cork, 5 TSB-CP

12 **Michelle Faherty** 10.8.68 (1y, 10) 4:15.37 / 4:41.69M '93
4:16.79, 4:16.90, 4:17.27, 4:24.2, 4:24.36; 4:23.33i;
4 Crawley, 3 Wrexham, 6 TSB-CP, 1 N v Sc,W

M = 1 mile time. Equivalents: 4:05.0m = 4:24.6M, 4:10.0m = 4:30.1M, 4:15.0m = 4:35.5M, 4:20.0m = 4:41.0M

Holmes, in her first major season at the event, broke into the world top ten and is number one in Britain, ahead of Murray, with whom she had that great race at the AAAs, and Wyeth. Holmes is the first to rank first at both 800m and 1500m since Kirsty Wade in 1986. Hartigan was 2-2 with Gibson, whose much faster time just gives her the edge, and 4-1 with Davies, whose higher place against the USA gave her the European place. Griffiths was 3rd at the AAAs, ahead of those ranked above her, but ran the distance too infrequently to be higher.

Men 3,000m (unranked)

Rob Denmark 23.11.68 (1) 7:39.55 '93, 8:26.05M '92
7:42.62; 7:56.60i; 2 Lausanne

Mark Rowland 7.3.63 7:49.82 '89, 8:26.19M '87
7:50.30, 7:54.05; 8:02.44i, 8:09.43i;
2 Lappeenranta, 15 Koln

Gary Staines 3.7.63 7:41.79 '90, 8:23.16M '91
7:51.26, 7:53.71, 8:29.12M;
5 Lappeenranta, 2 Stockholm, 6 Goteborg

John Downes 21.7.67 7:59.50 '90
8:27.00M, 7:54.53; 3 Tampere, 2 Hechtel

Andrew Keith 25.12.71 c.8:22i/8:24
7:49.83i, 8:02.81

John Mayock 26.10.70 7:48.47i '92, 8:03.75 /8:32.54M '91
7:55.31i

M = 2 mile time. Equivalents: 7:45.0m = 8:19.2M, 7:50.0m = 8:24.6M, 7:55.0m = 8:30.0M, 8:00.0m = 8:35.2M

Women 3,000m

1 **Yvonne Murray** 4.10.64 (13y, 1) 8:29.02 '88
8:29.60, 8:36.48, 8:54.46, 8:56.81;
2 TSB-CP, 2 EC, 1 WCp

2 **Alison Wyeth** 26.5.64 (6y, 2) 8:38.42 '93
8:45.76, 8:46.42, 8:47.98, 8:51.34, 8:52.68, 8:54.9;
4 AAA, 1 Dublin, 2 Helsinki, 7 TSB-CP, 6 EC, 3 CG

3 **Sonia McGeorge** 2.11.64 (7y, 4) 8:51.33 '90
8:51.55, 8:52.73, 8:54.91, 8:55.47, 8:59.55, 9:00.98; 5 Jena, 1 AAA, 3 ECp, 5 Linz, 1 v USA, 11 EC, 4 CG

4 **Laura Adam** 28.2.65 (3y, -) 9:05.33 '92
9:02.47, 9:05.97, 9:06.63, 9:12.16, 9:15.21;
4 E Clubs, 8 Hengelo, 2 AAA, 9 Linz, 8 CG

5 **Debbie Gunning** 31.8.65 (1y, 12=) 9:16.94 '93

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9:12.12, 9:15.43, 9:23.20, 9:24.93; 9:15.11i, 9:21.36i; 2 Dublin, 1 GhG, 1 Nitra, 3 v USA

6 **Wendy Ore** 23.5.66 (1y, -) 9:19.04
9:14.72, 9:15.21; 3 AAA, 5 v USA

7 **Susan Parker** 24.3.70 (2y, 8) 9:06.2 '92
9:18.03, 9:33.18, 9:44.85;
3 IR, 2 GhG, 1 N v Sc,W

8 **Tanya Blake** 16.6.73 (1y, -) 9:17.72 '94
9:21.07, 9:25.08, 9:29.03;
5 AAA, 20 Helsinki, 2 K Lynn

9 **Sarah Bentley** 21.5.67 (1y, -) 9:33.42 '92
9:18.09, 9:25.93, 9:35.82; 9:37.17i, 9:41.74i;
3 GhG, 3 K Lynn, 1 Solihull

10 **Jo Symonds** 19.2.68 (1y, -) 9:20.20 '93
9:24.21, 9:24.36, 9:25.44, 9:28.94, 9:41.29;
1 BL2 (1), 6 AAA, 5 Cork, 6 GhG

11 **Amanda Wright** 14.7.68 (0y, -) 9:06.7 '92
9:19.67, 9:32.56; 4 Cork 9 GhG

12 **Angela Davies** 21.10.70 (0y, -) 9:34.8 '93
9:14.1; 1 Oxford

Not ranked but close

Suzanne Rigg 29.11.63 (1y, 7) 9:07.3 '93
9:12.6mx, 9:24.2, 9:33.7mx, 9:34.8

Jayne Spark 16.9.70 (1y, 5) 9:06.7mx / 9:22.5 '93
9:14.3mx, 9:19.4mx, 9:26.36; 9:28.45i; 6 Cork

Maxine Newman 15.12.70 (0y, -) 9:12.41 '90
9:26.52, 9:38.75; 1 IR, 4 GhG

Suzanne Morley 11.10.57 (1y, -) 8:56.39 '84
9:23.08, 9:24.74, 9:40.1, 9:47.47;
1 Bracknell, 1 South, 12 Belgian

Not ranked

Kate McCandless USA 22.6.70 8:56.00 '93
8:59.3, 8:59.64, 9:02.24, 9:06.78, 9:09.17;
13 Rome, 1 Cork, 7 Linz, 10 Nice, 6 GWG

Murray is again top, and was the world number two to Sonia O'Sullivan in 1994. Wyeth struggled initially to recapture her 1993 form, but came through to European 6th and Commonwealth bronze and even better form at 5000m. McGeorge ran consistently well to ran third and Adam was an isolated fourth with a big gap to the rest. There was little between those ranked 7th to 12th, but all had best times that would not have seen them ranked any time in the last decade; the 10th best time of 9:17.4 is the worst since 1980. Morley's only appearance in these rankings was at 11th in 1984 when she ran 8:56.39, she although her best in 1994 was over 26 secs slower she was in contention for a place.

Men 5,000m

1 **Rob Denmark** 23.11.68 (4y, 1) 13:10.24 '92
13:22.40, 13:23.00, 13:32.60, 13:37.50, 13:40.10, 13:59.80; 7 TSB-CP, 11 Oslo, 2 EC, 1 CG

2 **John Nuttall** 11.1.67 (4y, 4) 13:24.26 '92
13:23.54, 13:25.51, 13:30.78, 13:32.47, 13:38.65, 13:39.10, 13:40.65; 10 TSB CP, 6 Hechtel, 5 EC, 3 CG, 2 WCp

3 **Jon Brown** 27.2.71 (4y, 2) 13:19.78 '93
13:23.96, 13:24.79, 13:34.37, 13:34.84, 13:40.62; 13 TSB-CP, 3 GWG, 8 Monaco, 4 CG

4 **John Downes** 21.7.67 (1y, -) 13:57.56 '92
13:29.91, 13:43.07, 14:10.18; 18 AAA, 1 Gavle, 15 TSB-CP

5 **Richard Nerurkar** 6.1.64 (5y, 5) 13:23.36 '90
13:36.89, 13:50.0, 13:53.21; 1 Oxford, 2 Rehlingen, 2 Punkulaiden

6 **Justin Hobbs** 12.3.69 (1y, -) 14:05.7 '93
13:45.53, 13:50.72, 14:10.25; 2 W v Sc,I,T, 8 CG

7 **Gary Staines** 3.7.63 (7y, 3) 13:14.28 '90
13:45.57, 13:56.6, 14:03.06; 2g v USA, 13 Zurich, 4 Pune

8 **Dermot Donnelly** 23.9.70 (1y, -) 13:55.32 '93
13:47.0, 13:52.63, 13:54.80, 14:00.00, 14:15.57; 2 Crawley, 1 AAA, 6 v USA, 15 CG

9 **David Miles** 16.11.65 (1y, -) 13:55.53 '88
13:46.66, 14:01.48, 14:02.54, 14:05.48, 14:05.87; 1 CAU, 8 AAA, 5 Cork, 4 v USA, 6 Tallinn, 1 N v Sc,W

10 **Eamonn Martin** 9.10.58 (9y, -) 13:17.84 '89
13:46.19, 13:48.61, 14:09.2+; 4 Cork, 3 Arhus

11 **Paul Evans** 13.4.61 (2y, 6) 13:30.83 '92
13:46.5+, 13:47.21; 18 TSB-CP

12 **John Mayock** 26.10.70 (4y, 8) 13:26.97 '92
13:50.58; 4 ECp

Denmark, Commonwealth champion and European silver medallist, was top for the fourth successive year. Nuttall also ran brilliantly at both championships and at the World Cup, and Brown also excelled in Victoria. Ex-Irishman Downes is fourth and Nerurkar, preparing for the marathon, fifth, but then there is a huge gap to the mid 13:40s men. Mayock may deserve better for his 4th at the European Cup, but it was a slow race and his only one at the distance.

Women 5,000m (unranked)

Alison Wyeth 26.5.64 15:47.97 '91
15:10.38, 15:15.45; 1 Berlin, 3 GPF

Suzanne Rigg 29.11.63 15:57.67 '93
15:56.83, 15:58.7, 16:28.2+, 16:47.6+;
5 Hechtel, 1 Stretford

Carol Greenwood 15.3.66
15:57.29, 16:47.05+; 10 Bratislava

Shireen Barbour 4.9.60 16:02.95 '84
16:06.49, 16:27.5; 1 AAA

Jayne Spark 16.9.70
16:12.1; 2 Stretford

Joanne Thompson 30.10.58 16:40.50 '92
16:13.43, 16:47.2+; 1 Crawley

Sarah Bentley 21.5.67 16:55.36 '92
16:16.82; 2 AAA

Vikki McPherson 1.6.71 16:30+ '92
16:19.46, c.16:28.3+; 11 Hechtel

Amanda Wright 14.7.68 16:04.51 '92
16:22.95; 3 AAA

Angela Hulley 8.2.62 15:41.11 '90
16:25.7, 16:35.6, 16:48.4+

nr **Katy McCandless (USA)** 22.6.70 15:34.93 '93
15:35.81, 15:41.08; 9 Stockholm, 4 GWG

Wyeth had a magnificent win in Berlin before third in the Grand Prix final

Men 10,000m

1 **Rob Denmark** 23.11.68 (1y, -)
28:03.34, 28:20.65; 1 AAA, 3 WCp

2 **Martin Jones** 21.4.67 (1y, 11) 28:57.23 '93
28:33.18, 29:08.53; 2 AAA, 4 CG

3 **Gary Staines** 3.7.63 (6y, 3) 27:48.73 '91
28:25.60, 29:57.27; 5 ECp, 15 EC

4 **Justin Hobbs** 12.3.69 (1y, -)
28:17.00, 28:45.86, 29:28.08;
3 AAA, 10 Helsinki, 22 EC, dnf CG

5 **Eamonn Martin** 9.10.58 (6y, -) 27:23.06 '88
28:46.50, 29:15.81; 6 GWG, 6 CG

6 **Barry Royden** 15.12.66 (1y, -) 29:20.22 '91
28:47.17, 29:38.36; 4 AAA, 4 Belgian

7 **Carl Udall** 13.7.66 (2y, 12) 28:48.19 '92
28:49.96, 29:20.25; 5 AAA, 15 Helsinki

8 **Chris Robison** 16.3.61 (1y, -) 28:39.35 '86
28:51.12, 29:50.23; 6 AAA, 10 CG

9 **Richard Nerurkar** 6.1.64 (7y, 2) 27:40.03 '93
28:53.03; 4 Seville

10 **Martin McLoughlin** 23.12.58 (4y, -) 28:15.58 '86
28:55.57; 7 AAA

11 **Tommy Murray** 18.5.61 (0y, -) 29:16.42 '92
29:12.35; 1 Scot

12 **Bashir Hussain** 20.12.64 (0y, -) 30:14.16 '93
29:16.29, 29:40.30; 1 CAU, 8 AAA

12 **Andrew Pearson** 14.9.71 (1y, 8) 28:40.49 '93
29:14.91; 1 McD

Denmark said 'never' again for this event after his brave World Cup run in appalling conditions, but he showed great form then and earlier to win the AAA title. He is the first man to head both 5k and 10k rankings since Nick Rose in 1980. Paul Evans and Nerurkar are our other two world-class 10k men, but the former did not finish his only track race (in Brussels), and the later ran just one track 10k during his marathon build-up. Jones followed Denmark in the AAAs and was our best placer in Victoria, and Staines beat Hobbs, AAA 3rd placer, in Helsinki.

Women 10,000m

1 **Yvonne Murray** 4.10.64 (2y, -) 33:43.80 '85
31:56.97; 1 CG

2 **Suzanne Rigg** 29.11.63 (3y, 2) 32:44.06 '93
33:01.40, 33:38.14, 33:42.80; 3 AAA, 4 CG, 5 WCp

3 **Vikki McPherson** 1.6.71 (3y, 1) 32:32.42 '93
33:02.74, 34:03.07; 6 ECp, 5 CG

4 **Zahara Hyde** 12.1.63 (1y, -) 34:53.2 '89
33:23.25, 33:57.64, 34:43.24; 7 Walnut, 1 AAA, 13 CG

5 **Karen Macleod** 24.4.58 (3y, -) 33:13.88 '89
33:34.85, 34:05.00; 11 St Denis, 1 Scot

6 **Carol Greenwood** 15.3.66 (1y, -)
33:34.96; 2 AAA

7 **Angela Hulley** 8.2.62 (4y, -) 32:42.84 '89
33:45.04, 33:49.91; 4 AAA, 10 CG

8 **Shireen Barbour** 4.9.60 (2y, -) 33:10.25 '86
33:52.47; 5 AAA

9 **Joanne Thompson** 30.10.58 (1y, -) 34:32.55 '90
33:56.04; 6 AAA

10 **Alison Rose** 27.9.67 (2y, 5) 34:35.73 '93
33:57.86; 7 AAA

11 **Daniele Sanderson** 26.10.62 (0, -) 35:32.6 '92
34:00.46; 8 AAA

12 **Helen Titterington** 24.10.69 (1y, -) 32:36.09 '89
34:08.00; 9 AAA

Murray's great Commonwealth run makes her a clear first, nine years after she was ranked 5th off her only previous track 10k track run in 1985. There were three Scots in the top five.

Twelve Things You Should Know About ...

by Frank Horwill

Twelve things you should know about ...

VO_2 max.

1) The term VO_2max. is a term used by physiologists to express cardio-respiratory efficiency. The maximal rate of oxygen consumption which can be put to use to perform work can be readily determined by indirect calorimetry - a method of measuring metabolism by collecting samples of air. This usual test involves an individual running to exhaustion on a treadmill while samples of expired air are collected for analysis.

2) A non active person is capable of consuming 3,000mls of oxygen per minute during a maximal run, compared to 5,400mls in a well-trained runner. These figures *have to* be divided by the person's bodyweight to calculate the VO_2max.

This represents the most useful indicator of the individual's ability to maintain a fast pace in an event in which bodyweight is being self-propelled. One test is where the treadmill is set at 11.3km/hour and every minute during the first 5 minutes the slope is increased by two degrees, and thereafter one degree every minute to exhaustion. Top-class runners can maintain speed for 14 minutes (male) and 12 minutes (female), these periods equate to 75mls/kg/min. and 64mls/kg/min. respectively.

3) In the absence of easy access to calorimetry, the maximum oxygen uptake can be approximated by using several different methods:-

(a) **The Balke Test** - the athlete runs for 15 minutes around a track on a windless day, endeavouring to cover as much distance as possible. The total distance covered is then plotted on Balke's graph, e.g.

- 6,000m = 80mls/kg/min;
- 5,500m = 74mls/kg/min.;
- 5,000m = 67.5mls/kg/min;
- 4,500m = 62.5mls/kg/min.;
- 4,000m = 56.5mls/kg/min.;

Good class club runners should expect a minimum reading of 67.5mls (male), and 63.5mls (female), this equates to 5,000m and 4,600m being run respectively on the 15 minute test.

(b) The **NCF Bleep Test** involves a tape- recording; runners traverse between two lines set several metres apart either in a gym or a suitable surface outdoors. The runner must reach the lines as a bleep goes. The tape announces an increased pace every few minutes, these increases are stated as "Level 1" to begin with and continue to "Level 15" pro rata. This test is issued with a table of levels and the corresponding predicted VO_2max.

(c) **Cooper's 12 minute run** test. This test is really for non-runners, i.e. only 12 minutes as opposed to 15 minutes on the Balke test. If you compare the distances on the two tests, and adjust for the extra three minutes, the result will be the same. *[Editor's note: Balke, however, doesn't start his predictions until you have run 4k, presumably because anyone who cannot run 4k in 15 minutes is not worthy of predicting!]*

Compared to the treadmill test, the predicted maximum oxygen uptakes are 95% accurate. Some concern has been expressed about the NCF bleep test, the continual turning every few metres has led to leg injuries in some susceptible athletes. However, its main asset is that the test can be conducted inside a reasonably sized gym.

4) The results of VO_2max. tests for some of the world's leading middle-distance athletes are as follows:

i **Coe** (82.6mls/kg/min) ran 1:41.73 for 800m;
ii **Kratochilovola** (72.8mls/kg/min) ran 1:53.38 for 800m;
iii **Aouita** (82.1mls/kg/min) ran 3:29.45 for 1,500m;
iv **Kazankina** 72.7mls/kg/min. ran 3:52.47 for 1500m;
v **Cram** (82.1mls/kg/min) ran 3:46.31 for the mile;
vi **Artyemova** (71.1mls/kg/min) ran 4:15.80 for the mile;
vii **Kristiansen** (70mls/kg/min) ran 30:59.42 for 10k.

Over a period of years physiologists have been able to associate VO_2max. figures with actual and expected performance times. Various tables have been published by physiologist estimating performance times based on VO_2max. figures. These have been, in the main incredibly pessimistic. Their figures at the higher level have been accurate, but at lower readings the tables are way off target.

For example, if on the Balke Test an athlete runs exactly 5k in 15 minutes this implies a VO_2max. of 67.5mls/kg/min. But, on the physiologists tables, such a figure for VO_2max. would only indicate that 5k could be run in 15½ minutes! Further, the 1,500m predicted time for 67.5mls/kg/min. is only 4:09, whereas the writer has not known an athlete with this figure who could not run sub 4:04 for the distance.

5) It will be seen that maximising the VO_2max. figure is one of the critical factors in middle-distance success. Thus the question is what is the best and most economical way to achieve this in terms of limited time.

The history of distance running gives us a conflicting picture. The first man to break 4 minutes for the mile, Bannister, had a VO_2max. of 78mls/kg/min. His weekly mileage was twenty-eight. Seb Coe's mileage was 55 miles per week. Cram's mileage was 65 mpw.

We now come to an important fact - when the mileage is low the running must be faster than those who are doing greater mileage. In world-class terms, big mileage among middle-distance runners has decreased but the *intensity* has increased. This trend has a physiologically sound basis.

Work physiologists, Costill, Cooper, Daniels and Anderson, are all agreed that the VO_2max. is more efficiently improved if work is done continually through the range of 80 and 100% of the VO_2max. In the case of Bannister, he chose the higher end of the scale, his work was between 85 and 110% of the VO_2max. His 5k session was 3 x 1½ miles at 70 secs per 440yds. He trained mainly at mile (110%) pace and 5k pace (95%). Such sessions as 10 x 440yds in 56 - 60 secs, 5 x 880yds in 2 mins, 2 x 3/4 mile, were all at 110%.

On the other hand, Peter Snell, Olympic gold-medallist at 1500m and 800m, did up to 100 miles a week in the winter at 75% of his VO_2max. Then switched to several weeks of hill running at 85% VO_2max. (about 10k pace).

We now know that steady running beyond 75 miles a week brings very limited results, but up to the 75 miles mark it improves VO_2max. by 15%.

VO_2max ...

6) We can now relate percentages of the maximum oxygen uptake to pace:-

- 80% is about 16 seconds a mile slower than your best 10k time.
- 90% is running at your best 10k pace.
- 95% is running at your best 5k pace.
- 100% is running at your best 3k pace.
- 110% is running at your best 1500m pace.
- 120% is running at your best 800m pace.

7) The problem now arises that many middle-distance runners have not raced these distances and will not know what speeds to train at.

One fairly accurate prediction is to work from the 1,500m time per 400m, and add 4 seconds per 400m for the equivalent 3k time. Add a further 4 seconds per 400m for the 5k time, and do the same for the 10k time. Thus a 1,500m time of 4 mins = 64 secs / 400m implies 68 secs / 400m for 3k and implies 72 secs / 400m for 5k = 76 secs / 400m for 10k. Thus a 100% VO_2max. session (3k speed), in this case would be 16 x 400m in 68 secs with 45 secs rest. A 90% VO_2max session would be 6 x 1,600m in 5:04 with 45 secs rest. An 80% VO_2max run would be 10 miles in 5:20 a mile - 53:20.

The calculation for females is to add 5 seconds per 400m to the 1500m times per 400m. Thus a 4:22.5 runner would average 70 secs / 400m, so 100% VO_2max work would be at 75 secs per 400m, 95% VO_2max. work would be 80 secs / 400m. 90% work at 85 secs / 400m, and 80% work at 90 secs / 400m. Thus a 10 mile run at 80% VO_2max in this example would take one hour precisely.

8) For some complicated reason physiologists believe that work at 95% of the VO_2max (5k speed) is the most beneficial, and the recommended repetition distance is 1,200m. In the above examples this would be 5 x 1,200m in 3:36, with 90 secs rest (male) and 5 x 1,200m in 4 mins with 90 secs rest (female).

9) Those fortunate enough to possess a heart-monitor, should note that 82-90% of VO_2max. is reached by running at 85 to 93% of their maximum heart-rate. The maximum heart-rate is easily established by running 400m flat out twice with 6 mins. rest after the first, and taking the maximum reading of both and taking an average.

Alternatively, men should take the figure 214, then allow 0.8 for every year of age and deduct it from the 214, e.g. 20-year-old x 0.8 is 16 deducted from 214 = 198 bpm. Women should take the figure 209, then allow 0.7 for every year, e.g. 25 year old x 0.7 is 17 deducted from 209 = 192bpm.

10) We now come to the criticisms of the VO_2max. findings:

i World-class marathoners often have a low VO_2max. figure which would predict a much poorer marathon time than achieved. Agreed. But there have also been world class marathoners with high figures, e.g. Lopes - 80.4mls/kg/min. ran 2:07:11. What's the reason for this? The answer is economy of running. This is related to lactate threshold levels. For example, a runner with a reading of 67.5mls/kg/min. is predicted to run 2:33:25 (about 5:45 / mile). He runs 2:24:06 (about 5:30 / mile). He has a higher lactate threshold, he can run nearer to his VO_2max. without incurring a high lactate level which could force him to slow down. This is not revealed in oxygen uptake testing. However, such examples are rare, and in the middle-distance events, very rare.

ii An athlete can improve his performance since his last VO_2max. test, but the test may be precisely the same as before. Agreed. The test does not reveal improved lactate threshold levels. However, the strange thing is that as the VO_2max. improves, so does the lactate threshold level. This is because work between 95 and 100% of the VO_2max. has a dramatic effect on lactate threshold levels. A 4 mile run 12 secs / mile slower than for one's best 5k time, known as a lactate response run, will boost lactate tolerance.

iii The VO_2max. is always expressed as a function of body weight. Thus losing weight numerically raises the reading of VO_2max. whilst there may have been no improvement in cardio-vascular performance. There would, however, be an improvement in competitive performance!

11) So, what is the best way to maximise your oxygen uptake?

You have a choice. You can take the volume way, for this you need to increase your mileage gradually from 30 to 50 miles a week, thence to a maximum of 75 miles per week of just steady running, at about 75% VO_2max. This should give a 15% boost if held for six weeks. To give it a further boost, you will need to introduce work at 95% of VO_2max. once a week, or alternate 5k pace work with 3k pace work, i.e. one week 5k pace, next week 3k pace.

Another way is to do 90% work, 95% work and 100% work each week with recovery runs next day of not less than 35 minutes 75% VO_2max. Here is a sample:-

Day 1 80% VO_2max. run (16secs/mile slower than best 10k time).
Day 2 75% VO_2max. run - 35 mins. (75% MHR)
Day 3 90% VO_2max. - 10k fast (93% MHR).
Day 4 75% VO_2max. - 40 mins. (75% MHR).
Day 5 95% run - 5 x 1200 at 5k pace, 90 secs rest. (95% MHR).
Day 6 REST
Day 7 100% run - 4 x 1500 at 3k pace, 3 mins rest (98% MHR).

Total mileage - 40 (incl. of warm up before Days 3, 5 and 7 - av. 86% VO_2max.)

12) The University of Montreal research reveals that your running velocity at VO_2max. (the speed at which you utilise your oxygen at your maximum possible rate) is vitally important [Ref. *Peak Performance*, Nov. 1994]. To ascertain this velocity is a complicated business but well worthwhile. The procedure is :-

i Find a 200m track or measure one out with a marathon wheel (Two straights of 60m and two curves of 40m)
ii Place markers every 50m inside the track.
iii Walk 200m in exactly 2 minutes, the cones every 50m will help adjust pace.
iv Everything else that follows is in 2 minute stages *without stopping*, but each 200m gets slightly faster, walk the second lap in 101 secs. (About 25secs/50m), thus you will cover more than 200m at this speed inside 2

VO_2max. Velocity Table

Stage	Time per 200m	Distance per Stage
6	65 secs	370m
7	59 secs	407m
8	54 secs	444m
9	50 secs	480m
10	46 secs	522m
11	43 secs	558m
12	40 secs	600m
13	38 secs	632m
14	36 secs	667m
15	34.5 secs	696m
16	33 secs	727m
17	31.5 secs	762m

Twelve Things You Should Know About ... (3)

mins, i.e. 120 / 101 = 1.19 loops of the 200m track; 1.19 x 200m = 238m

v When you reach the 4 minute point (After the first 2 minute stages), start jogging.

vi For the third 2 minute stage, jog at a speed of 100 secs / 200m (25secs/100m)

vii For the fourth 2 minute stage jog at 85 secs / 200m (21 secs / 100m). You will cover 120/85 = 1.4 trips or 200m + 80m. Once the 2 minutes in this fourth stage expires you move straight on to the fifth stage. This is done at a speed of 74 secs per 200m. After each 2 minute period you increase speed slightly.

viii Keep on like this, on each stage you will be running further. See table below. On stage 10 = 522m, but on stage 17 you will cover 762m.

ix The whole procedure will take 34 minutes, but not everyone will complete 17 stages. Once you're 10m adrift of the tempo during a 2 minute stage - stop.

x Your VO_2max. velocity is your velocity over the last 2 minute stage competed successfully.

Once you have calculated the velocity at VO_2max, the following sessions can be done to boost the VO_2max.

i Warm up for 10 mins, plus 10 mins of stretching / strides.

ii Then run for two and a half minutes at your VO_2max. velocity with equal duration recoveries

iii Jog 10 minutes warm down

How many reps. should be done? The total should not exceed 10% of your weekly mileage. If you're doing 60 mpw, you do 6 miles of VO_2max. velocity work.

[Ed - here is a tip to save the reader a lot of time - your VO_2max. velocity is in fact 3k pace - another reason why five-pace theory is so all-embracing!]

Twelve things you should know about ...

Crash Training

1) The noted Chinese coach, Ma, is known to use it, also racing cyclists. What is it? It is crash training. What's it all about? Generally speaking, it is the doubling of one's average daily mileage *and* speed sessions for a period of not less than two days consecutively and not more than seven days consecutively.

2) Crash training *must always* be followed by an equal period of rest or recovery, so that if crash training has lasted a week you rest a week or do half to two-thirds of your *normal* training load.

3) What is the physiological basis for this activity? It's our old friend - compensation, but there is an adjective before that word, so, it now reads super-compensation. Apparently, the fitness returns from training severely one day and then easy the next day are not so great as training 2-7 days severely, followed by an equal number of days of recovery.

4) Is it dangerous? It could be. But the evidence of injury proneness due to severe training is higher in those who *persistently* train hard *without* adequate recovery. Crash training must always be for a limited period only followed by an adequate restitution.

5) But, there is also another type of crash training, albeit less severe, which lasts several weeks! Sixteen women embarked on a 12 month stamina-building programme in which they slowly raised their training volume from 5 to 40 miles per week. Nine of them trained in a fairly conventional way, running while still being able to converse with each other. In contrast, the other women included high-speed training from the very outset, running half of their total mileage each week at faster than lactate threshold pace (Between 5k pace and 10k pace). This latter type of work proved to be far superior to the stamina building. Their VO_2max and growth hormone concentrations were way ahead of the talking-while-running group. Ref. *Journal of Applied Physiology*, vol. 72(6), pp 2188-2196, 1992.

What's more, the faster training group were not injured more frequently. This procedure tends to undermine the argument that base-training should include only small quantities of speedwork at the start.

6) Most runners adopt a "steady as you go routine" i.e. fast day, followed by about two or three days of recovery runs. But a good deal of research now suggests that if above-normal amounts of intensities of exercise are utilised for many consecutive days at a time, followed by longer-than-usual recovery bouts, greater fitness is reached. The rationale for these back-to-back days of hard training is as follows:- by exercising strenuously on each day, recovery never lasts for more than 22-23 hours (the time between workouts). As a result, total training stress is heightened, and recovery - once it finally occurs - produces much greater-than-usual training adaptations. These raised responses are sometimes referred to as super-compensation. Sudden, higher-than-normal amounts of tough training, called "crash cycles", might indeed lead to major breakthroughs in performance, *but they also increase the risk of overtraining*. The knack is to find a crash cycle which powers an endurance runner to a previously unattainable physiological peak without creating so much muscular disturbance that the athlete begins to lose rather than gain.

7) One of the first studies on these lines was conducted by Dr. Peter Snell et al at the St. Paul Human Performance Centre in Dallas, Texas. Snell, former world recorder for the mile and half-mile, toughened the training of several endurance runners by adding two additional hard-interval workouts per week to their schedules during a 2 week training period. The 2 week crash produced some positive effects: anaerobic power, which plunged during the 2 weeks of intense work, was significantly higher than normal after 2 weeks of recovery, and VO_2max. tended to rise after the crash cycle, too. There were snags to this research:

i No control group was utilised in this study.

ii The crash cycle produced some negative effects, the athlete's cortisol levels rose during the heavy training and remained so for 2 weeks afterwards. This is considered a sign of overtraining with subsequent breakdown of muscle tissue.

iii The athlete's heart-rate during sleep were still elevated 2 weeks afterwards.

Ref. Changes in Selective Objective Parameters during Over-training - *Medicine and Science in Sports and Exercise*, vol. 18, Abstract 268, 1986.

Another study carried out at the University of Western Australia, involved five runners doing a 10 day crash cycle. The athletes interval-trained twice a day for

Crash Training ...

10 days, each workout consisted of 15 x 1 minute work intervals at 4:40-5:20 per mile pace, with 2 minute rest intervals. Following this intense training (20 total intervals), the athletes recovered for 5 days by running lightly for 10 minutes per day. Few benefits accrued from this programme. Ref. *European Journal of Applied Physiology*, vol. 64, pp 335-344, 1992.

However, a different 10 day crash cycle produced better results for endurance swimmers. World-famed physiologist Dave Costill *et al.* at Ball State University followed 12 collegiate swimmers during a 10 day period in which average daily training volume sky rocketed from 4,266m to 8,970m per day (More than 100% increase), while the training intensity was 94% VO_2max. (about equivalent to 5k pace in runners.) *Four of the swimmers couldn't swim at this VO_2max. percentage, their problem was inadequate carbohydrate intake. When doing crash training 200g of liquid carbo-loader should be ingested on top of normal meals.*

After this zealous programme blood volume rose 11% and subsequently led to greater fitness gains than would have been obtained from normal amounts of training. Ref. Effects of Repeated Days of Intensified Swimming Performance - *Medicine and Science in Sports and Exercise*, vol. 20(3), pp 249-254, 1988.

Further research was done with runners who boosted their daily average training from 8 to 17 miles per day for 20 consecutive days. On cessation of this work, morning heart rates jumped 10 beats per minute, red blood cell concentrations were depressed, and persistent fatigue was present. Negative reactions were observed after 7 days of the regime.

The conclusion of this research was that double volume overload training should not last longer than a week. Ref. Increased Morning Heart Rate in Runners - A Valid Sign of Overtraining - *The Physician and Sports Medicine*, vol. 13(8), pp 77-86, 1985.

8) David E Martin in *Training Distance Runners* by Martin and Coe, Leisure Press, 1991, makes reference to the advantages of two days back-to-back quality sessions, the first day setting up the physiological apparatus which carries over to the second day. The two-day, three training sessions a day courses at Merthyr Mawr, often saw several athletes, who rested for two days afterwards, come up with improved fitness. These courses were conducted by the BAAB under the supervision of the then National Event MD Coach, Harry Wilson and Frank Horwill, from 1965 to 1972, they involved attendance by some of Britain's greatest athletes to be. Alas, from 1984 onwards many internationals avoided the courses thinking them too tough. We now see that these tough week-ends were crash-training years ahead of their time.

9) Crash training is not entirely new. Lasse Viren (Finland), was known to follow a cycle of severe week, active rest week, moderate week, light week. If week 1 was 100 miles, week 2 would be 25 miles, week 3 - 75 miles, week 4 - 50 miles. *[Ed - this very much follows the ideas behind the Labuschagne article in the last issue]*

Week 1 would then go up to 125 miles, week 2 - 33 miles etc.. The aim was to double the severe week within 4 months. Viren won four Olympic gold medals at 5k and 10k.

10). More recent reports from the cycle-racing world states that cyclists respond well to crash training not exceeding seven days. One report stated that a group of cyclists who doubled their weekly mileage and also their speed-work, for 7 days, followed by 7 days of active rest, boosted their VO_2max. by an unprecedented 7%. But it was tough for them! At the end of a 7 day intensive work-load, their VO_2max. test result had dropped well below normal. But super-compensation a week later made it soar past previous best recordings.

11) One thing can be said about 3 day crash programmes, they prepare athletes mentally and physically for the rigours of Olympic heats, semi-finals and finals, all in the space of three or four days.

12) To sum up - observers of Ma's training methods with his sensational crop of world record-breaking women runners, say he definitely uses crash training quite frequently. That raises the question of what frequency? Jack Daniels, American coach/physiologist, has evidence that 3 day crash cycles improves the leg muscles' ability to metabolise fat, an adaptation which improves endurance by leading to greater glycogen conservation. There is no available research to guide the coach or athlete on the frequency of crash training. It is done, presumably, with a target race in view. If the procedure is to improve base-training (winter), then the 4 week cycle listed in point 9 stated may be advantageous where what work is done in the Active Rest and Light weeks is of a much faster pace than the Severe week.

Conclusion: if we take an 800m runner peaking for the National AAA/WAAA championships, a form of crash training could be to double the number of track-training days.

Let us assume that the athlete currently trains on the track on Sunday, Tuesday and Thursday. On Sunday, work is at 1,500m pace, on Tuesday it is at 800m pace, and on Thursday it is at 400m pace, (full-out sprints from 250m downwards). The days after track days are steady runs from 35 to 60 minutes. This could be revised to read:

Sun	1,500m pace work
Mon	800m pace work
Tues	400m pace work
Wed	1,500m pace work.
Thurs	800m pace work
Fri	400m pace work
Sat	1,500m pace work

This might then be followed by two days of complete rest, then five days of easy jogging. Normal training should then resumed. Such a procedure could be tried 12 weeks' before the championships and, if successful, again 6 weeks before. Lesser crash cycles (3 days), could be tried on a 3 weekly basis.

It would seem common sense that for the week preceding any crash cycle vitamins B and C should be increased and maintained during the crash period together with carbohydrate replacement within a half hour of ceasing training. Injury prone athletes are not advised to crash train.

The writer is neither recommending nor condemning crash cycles. If it is used, caution is advocated. If it is not used, you will never know what heights could have been achieved, but, if you are a coach you cannot be accused of risking your athletes' welfare if you discuss the matter fully with them and come to a unanimous decision.

Twelve Things You Should Know About ... (5)

Twelve things you should know about ...

The Steeplechase

1) For many years in Britain the steeplechase was always run over the distance of 2 miles even though the Olympic distance was 3,000m. From 1955 to 1975, British steeplechasers were among the best in the world, e.g. Chris Brasher won the 1956 Olympic steeplechase, however, he was, at first, disqualified for allegedly impeding a Russian competitor over a barrier in the final stages of the race. Maurice Herriot, won a silver medal in the 1964 Tokyo Olympics. John Disley, gained a bronze medal in the 1956 Olympics. Mark Rowland gained a medal in the 1988 Seoul Olympics.

2) There are twenty-eight hurdles (barriers) and seven water jumps in the race. Where possible, the water jump should be the fourth jump in each lap. There is no barrier during the shortened first lap, there being 257.8m to the first hurdle. The time taken to clear the obstacles by a competent performer has been assessed at:- water jump - 0.9 to 1.1 secs; barrier - 0.4 secs. This means a total time of 6.3 to 7.7 secs for clearing the water jump and 11.2 secs total for the hurdles. The combined duration being 17.5 secs. However, only M Karst (W Germany), could get near this conversion time in the race, his flat time for 3k being 7:58.8 and a 3k S/C time of 8:18.4, a differential of 19.6 secs. Keino had a fast 3k flat time of 7:39.6 with a best of 8:23.6 for the 'chase, a differential of 44 secs.

3) It would be safe to say that a good steeplechaser should possess;

i the stamina of a good 5k runner,
ii the speed of a 1500m runner,
iii the flexibility of a 400m hurdler
iv and the lactate buffering of an 800m runner.

It is a rare to find all these qualities in one runner! Dave Bedford, former world record holder for 10k, also held the UK 5k record when he broke the UK steeplechases record, and in doing so, stepped on the top of every hurdle. Filbert Bayi, former world mile-record, scorched through the first 2,000m of his steeplechases but faded rapidly over the last 1,000m. Eric Shirley, winner of the AAA 3k Championships on several occasions, hurdled effortlessly over the barriers but could not get below 4:06. for the mile.

4) As the water jump takes twice to three times as long to clear than a barrier, some regular training sessions (Minimum of once a month during the winter, and once every 2 months in the summer) should be done over it. The water-pit should always be checked for debris which is out of sight. Severe injuries have occurred when athletes have landed on hidden soft-drink cans which have led to heavy falls. If the water-jump is not available, five hurdles or barriers should be used, the fifth correctly spaced opposite the water jump. An alternative is to place a steeplechase barrier across the long jump run-up and use the sand pit in lieu of water for a safe landing.

To become competent at the water-jump during training, mark out 16 yards back from the jump. This can be long-walking strides or 52-55 heel-to-toe consecutive steps, however, accurate measurement with a tape is advised. White-coloured adhesive tape should mark the spot. Go back a further 20 metres and run up to the marker at normal racing speed and *hit the mark with the foot you want to place on the rail.*

This gives a *seven* stride approach, the eighth being placed on the rail. The 16 yard marker has to be shuffled about to suit you personally but usually 54 foot-lengths is about right. With practice this marker can be dispensed with. Much time is lost "stuttering" with the feet before the water jump, and, indeed, any of the barriers; the key is to adopt an aggressive, bold approach with an unbroken rhythm.

5) When training over five hurdles, start with your back to the fifth hurdle in the straight. Early season sessions can be:- 8 x 400m (5 hurdles) from 68 to 78 secs. according to fitness with declining rest to inure yourself against the growing fatigue experienced in the race. This recovery pattern is suggested:- 2 mins 30 secs after the 1st 400m, 2 mins 15 secs after the 2nd 400m; 2 mins after the 3rd 400m, and pro rata down to 1 minute recovery after the eighth. Also, 4 x 800m from 2:16 to 2:36 with 5 mins rest decreasing by 60 secs after each rep.

A tougher, and perhaps more meaningful session is 2 x 1,600m in 4:32 to 5:32 with 3 mins rest. The life of a steeplechase specialist is somewhat lonely. He cannot do his training while others are using the track (or with great difficulty) and therefore has to train alone at times when the track is empty. To offset this, local steeplechasers should get together every month (from different clubs) and have, say, a Sunday afternoon sessions together. The benefit of this exercise is that it is one thing to be able at hurdling on one' s own, but it is another thing when three or four athletes are approaching the barrier together.

6) The ability to hurdle off either leg is a major asset and one that should be started early in the winter over adjustable / collapsible hurdles set on the lowest rung. In due course these can be raised to the regulation steeplechase height (three feet).

7) At various stages in an event's history there is some serious thinking as to how it will evolve. Thirty years ago the emphasis was greatly on barrier and water-jump technique to the exclusion of practically anything else.

The result was that the steeplechase became the refuge of the not-so-good miler or 3 miler. The event earned the unenviable reputation of being one for the "hack"! But, a new world record-breaker Kerry O'Brien (Australia), shocked exponents by revealing that the only time he went over the barriers was in a race! It became clear that too much attention was being given to technique and not enough to fitness, in particular, race fitness at 800m, 1,500m, 3,000m, and 5k races. The following race programme is recommended: May - 3k race and 1,500m race; June - 3kSC - 800 - 1,500m: July - 3kSC, 800, 1,500m; August - 3kSC - 800m - 1,500m; September - 3kSC - 3k - 5k.

8) The Steeplechase is 55% aerobic and 45% anaerobic, this means that of every 10 training sessions above six should be aerobic and four anaerobic.

The very surprising thing about this allocation is that it is not so far removed from the 800m allocation of 67% anaerobic

The Steeplechase ....

and 33% aerobic, or the 1,500m allocation of 50% anaerobic and 50% aerobic. Therefore, work at 800m and 1,500m speed will play an important part in a barrier-man's preparation. Here is a 14 day schedule:

Day 1 Aerobic - Run 20k steady.
Day 2 Anaerobic - 6 x 500m at best 1,500m pace with 2 mins rest.
Day 3 Anaerobic - 8 x 200m at best 800m pace with 90 secs rest reducing by 15 secs per rep. to just 15 secs rest before 200m, and then start with 90 secs again.
Day 4 Aerobic - Run 10k fast.
Day 5 Anaerobic - 8 x 100m full out - walk back recovery.
Day 6 Rest.
Day 7 Aerobic - 16 x 400m at best flat 3k pace with 45 secs rest.
Day 8 Anaerobic - 5 x 600m at best 1,500m pace with 2½ mins rest.
Day 9 Anaerobic - 3 x 400m at best 800m pace with 3 mins rest.
Day 10 Aerobic - Run 20k steady.
Day 11 Anaerobic 1 x 350m, 1 x 300m, 1 x 250m, 1 x 200m, full out with 400m walk recovery.
Day 12 Steeplechase practice - 3 x 1,200m over five hurdles from 3:24 to 4:24 pace with 4½ mins rest.
Day 13 Aerobic - 1 hour fartlek (15 mins jog - 4 x 4 mins duration hard strides with 1 min jog recovery.
Day 14 Rest.

9) The schoolboy 'chaser will find that 200m repetitions are very useful, these should include two barriers or hurdles and the water jump. A reasonable time to start with is 45 secs / 200m with 90 secs rest x 4 building up to eight. The aim should be to keep reducing the rep times but keeping the recovery constant. After six such sessions the distance can be extended to 400m with five hurdles *but the recovery stays the same as for the 200s*.

10) Because of the heavy pounding the feet and legs undergo landing after all the barriers leg-strength is vitally important, and good elastic strength is required to drive off over the barriers. Hopping 25m twice on each leg every other day will do much to cater for this need.

11) Hip flexibility is essential for good barrier clearance. The trailing leg should be passed over a 3'6" high hurdle several times during all warm-up routines.

12) If both feet get wet on landing in the water-jump, this is a bad clearance. Think of *low* on the barrier, *push* on the rear leg as long as possible and *extend* it, while the landing leg is placed well forward. A video of your action or photographs can help get this technique right.

Fred Wilt 1920 - 1994
A Personal Tribute by Frank Horwill

Fred Wilt died aged 74 in the USA. Although I never met him and never spoke to him by telephone, we became good friends and corresponded for thirty years on different aspects of middle and long-distance training methods. The last letter I received from him was in June 1994. Once he wrote about an article he had read in *Athletics Weekly* about sprinting. The writer had used the expression "Run tall", and Fred said, "What the hell does he mean? Why do coaches use these meaningless terms without explanation". In 1993 he wrote again about periodisation as proposed by Matveyev (Russia), saying he thought it was "bull" but was being hailed in the States as a panacea for success. He asked me to write an article putting forward alternate views, which I did, this was published in *Track Technique* and Modern Coach and Athlete, the latter edited by his long-standing friend Jess Jarver.

Born in Pendleton, Indiana, December 14th, 1920, he became an FBI agent. In 1950 he was awarded the James E Sullivan Memorial Trophy which is given annually to the amateur athlete who, by performance, example and good influence, did most to advance the cause of good sportsmanship during the year.

His citation in part read - "Holding a responsible position with the FBI, it involved great personal sacrifice for him to keep active in athletics. Obliged to train on a catch-as-can basis, early in the morning and late at night, he nevertheless raced gallantly against the strongest possible competition whenever he could. His sportsmanship was conspicuous in victory and defeat."

"He made an exhaustive study of training methods and running form employed by the leading European distance specialists and unselfishly made available to the coaches and other competitors the results of his research and experience, thus helping to improve the general standard of distance running here".

The highlights of his career were:-

i The winner of ten national championships at cross-country and events from 2 miles to 10,000m.
ii 2 mile world indoor record in 1952.
iii USA national records in the 10k 1949), 3k (1950), 2-miles (1951), and the straight mile (1952).
iv Publication of *How They Train* in 1959, which was continually updated and is now in its tenth edition. This was primarily about distance running. He later produced other books on the same lines about sprints, hurdles, middle and long-distance. These books were to become "musts" for every aspiring distance coach.
v Perhaps his greatest work was *Run Run Run* published in 1964 which contained articles from thirty-eight contributors from all parts of the world, and a chapter from himself called "The Language of Training". This chapter alone made the book another "must" for the developing coach.

Tony Ward conducted an interview with him by taping the questions (in 1968) and sending them to Fred in America. Fred taped his replies and sent them back. The complete recording sounded like a face-to-face interview and was played to athletes attending the famed SCAA training weekend at Merthyr Mawr.

Fred spent his latter years as coaching co-ordinator for the USA Track and Field Association. He joined the BMC as an Associate Member in its formative years and made a habit of paying his subs by sending dollars in an unregistered letter, and always had something laudatory to say about the *BMC News*.

Farewell, old friend, we will not see your like again. The National Committee of the British Miler's Club extends their deepest sympathy to his next of kin and friends.

Twelve Things You Should Know About ... (7)

Twelve things you should know about ...

Orthotics

by Tim King

(advertisement feature)

1) Have you ever had an injury that refused to go away, or that seemed to come back year after year? If so, you may need expert bio-mechanical analysis.

On the whole, a large percentage of acute athletic injuries can be traced to a mechanical foot dysfunction, and if so, this dysfunction can be prevented with the use of orthotics. Remove the dysfunction, and the athlete is less likely to suffer the same injury again, although it must be stressed that much physiotherapy and rehabilitation over several months must be done before the injured area is back to full strength.

2) An orthosis is a hard, solid device placed inside the shoe. It is custom made to fit your foot, and is designed to prevent the foot from moving excessively out of its normal range of motion, and thus eliminating some of the excessive stresses applied by the athlete whilst striving for a heightened performance. The orthosis can be a simple arch support, or a more complicated functional tool used to apply corrective forces to the rear / mid foot, enabling maximum support and mechanical efficiency.

3) All human movements, whether simple or complicated, are governed by the laws of physics. Every day human activity such as sitting, standing walking and running are the final result of mechanical motion. These activities allow the athlete to improve and increase his or her performance. Therefore all human locomotor activity can be considered as a system of mechanical events with the nervous system providing the control, the muscle providing the power and the skeleton providing the mechanical leverage.

Through this system is derived the basis of modern biomechanics.

4) Why does the subject of orthotics carry such an ambience of uncertainty and apprehension? Is it the cost? Is it that some athletes and coaches have had bad experiences or hear of cases where 'orthotics' have had a negative effect? Or is it the lack of understanding and knowledge of where to go to be sure of a professional assessment and accurate product. Research has shown that a combination of all three is probably the most accurate conclusion.

5) The cost factor is important, but most athletes will pay for a service to help prevent injury, provided the service is value for money and results in an accurate product. The sad fact is that many so-called 'experts' use the subject of orthotics as a panacea for all lower limb and upper body mechanical ills.

They are usually qualified in a totally different area of therapy, and, as it is quite easy to recognise imperfect mechanical actions occurring during athletic activity, promote themselves as specialists in this field. This could not be further from the truth, and consequently many athletes and coaches have suffered from inaccurate prescriptions, badly manufactured orthoses and general bad advice.

Therefore careful selection is required by the athlete and coach to avoid the cowboy element in the sports injury market. It is for these reasons that apprehension and uncertainty surround the subject of orthotics. Here is a general guide to separate the good from the bad:

6) The key is to avoid any therapist who is not bio-mechanically qualified and who has little experience in prescribing and manufacturing orthotics.

7) Even if the analysis shows some dysfunction, the athlete may not automatically need orthotics. The old adage 'if it works, don't fix it' is very apt here. If an athlete does not have a history of injury, using orthotics may actually induce one!

8) The bio-mechanical assessment should involve more than just a videoed run on a tread-mill. Computer aided technology such as goniometers, or data from a motion analysis system should be used to accurately assess gait and motion. After the assessment, ensure that the foot in question is cast in plaster from a horizontal position held in the 'sub-talar' neutral' (the perfect neutral positioning of the foot which varies with each individual) by the therapist.

This will allow the rear/mid foot alignment to be corrected accurately. Be very wary of therapists using 'impression boxes' for casting; even with finely tuned eyes and much experience in prescribing orthotics, it is almost impossible to achieve an accurate imprint of the foot by this method.

9) Do not underestimate the importance of obtaining a correctly fitted and manufactured orthosis. Beware of the therapist who gives you a 'trial and error' orthosis as an interim period before the final product. This is because, firstly, any skilled clinician ought to be able to analyse the problem and get it right first time, and secondly, they will make more money out of you making these unnecessary 'trial and error' orthoses.

10) There are a few centres that offer good accurate advice within the existing market place:

i Many universities can offer accurate analysis but lack the professional manufacturing capability.

ii BiMAL Laboratory in Hammersmith, West London has a good reputation. Tel: 0181 741 9711

iii Aesthetes Spectator to Competitor Care, launched in Derby at the end of 1994, fronted by the author and launched an endorsed by our own David Moorcroft MBE. Tel: 01332 202232.

11) The Aesthetes network offers a full year support package - free of charge to any patient the Sports Injury Management System (SIMS), with a discounted physiotherapy on-site service.

12) An initial ½ hour assessment at Aesthetes will cost only £25, which will clarify the need for an orthosis or not. Further costs depend on the patient's needs and usually vary between £80-£275 (Gold Service). However, Aesthetes will offer all BMC referred athletes a large discount, so that the maximum cost for the Gold Service will not exceed £180.

Tim King, former athlete, is manager of Aesthetes Spectator to Competitor Care.

The Value of a Training Diary

by Bruce Tulloh

(first published in Peak Performance*)*

I didn't start to record my training methodically until the autumn of 1956, but for most of the time since then I have been keeping a record of what I have done. I used to base my training very closely on Franz Stampfl's book, "Running", which advocated a lot of interval training, with precise times for each lap and for the recovery interval. It was therefore essential for me to write down what I was doing so I could see what progress I was making. At about the same time I bought a 'Performance Record' book, advertised in *Athletics Weekly*, to summarise my racing results. What started as a necessary part of my training as an ambitious runner has now become an heirloom. It is a document which reveals not only the runner's physiological progress but also his social and psychological development. For me it is a trip down memory lane, but is also a mine of information about what happens to a runner over 40 years.

My first diary was a plain exercise book into which I ruled the following columns: date, type of training, details, reaction, going, weather. I recorded the total mileage for the week and the month, which enabled me to compare the distances run in February of one year with February of another, as well as the year-on-year mileages.

I see that in my first year at university I ran 2008 miles, thus averaging less than 40 miles a week. This gave me best performances at the age of 21 of around 1:58 for 800m, 4:18 for a mile and 14:41 for 5,000m. In the 1958-59 season, which was the year of my degree finals, I only ran 1677 miles (an average of 32 miles a week), on which I ran times of 1:54 (800m), 4:10 (mile) and 13:53 (5,000m). In the most successful of these early years,

Age	Training vol. (in miles)	Performances in Mile	3 Miles	6 Miles
20	1500 app.	4:36	14:35	-
21	2008	4:18	14:11	-
22	1776	4:10	13:59	-
23	2017	4:11	13:25	29:40
24	2017	4:06	13:17	28:32
25	1939	4:04	13:12	-
26	2145	3:59	13:16	27:57
27	1986	4:02	13:22	28:50
28	2500	-	13:19	-
29	2750	4:05	13:26	28:05
30	3186	-	13:32	27:23
31	2800	4:05	13:13	27:42

when I ran a sub-four-minute mile, finished second in the national cross-country over nine miles, won the European championships 5,000m and broke the British record for three miles (13:12), I ran a total of 2145 miles (an average of 41 miles a week).

The first thing that a diary gives you is a picture of quantity and consistency. Forty miles a week can consist of 10 four-mile runs or four 10 milers. The latter is evidence of more endurance but the former gives you a better training base on which to build something more effective. How many days training to the 2000 miles represent? Did the runner run every week of the year or did he have a break at certain times? Were there certain times of year when he ran better or worse than the others? This gives you a personal picture of the runner's health as well as his determination.

If the diary showed two months of high mileage, followed by a low period due to injury, there is the suggestion that he was over-training or over-racing at the time. This is where you look at the training and racing details to see if you can detect a pattern. If high mileage or very intense training are followed by injuries and illness, the message is clear.

One Saturday in May 1964, according to my diary, I won the Inter-counties three miles quite comfortably in 13.23. I was undisputed British number one and had already qualified for the Olympic team. Over the following weekend I ran 20 x 400 yards on grass on the Friday and went to a party. The next day I ran three miles, including 3 x 800 yards fast, in the morning, and 16 x 440 in the afternoon. On Sunday I ran another interval session in the morning, 8 x 880 yards, and then took part in a relay in the afternoon, which involved running 7 x 300 metres flat out. On Monday I did 8 x 1200 yards on grass, followed by speedwork on Tuesday and 15 x 440 yards on Wednesday, the last four averaging 61 seconds.

In six days I had done eight interval or speed sessions - and the hard sessions in the evening were done after a busy day's work. On the Saturday I won the mile and the three miles at the Devon championships, and three days later I went down with measles. I was not to recover fully for many months, long after the applause for the Tokyo Olympics had died away. Thirty years later my training diary shows me exactly what I did wrong, and the reason I have indulged in so much personal detail is to show how useful it can be - even if it is too late, I can prevent others from making the same mistake.

If I ask one of my athletes to keep a diary now, I ask them to record two more things, their weight and resting pulse. These two simple parameters, plus the "Reaction" column, tell me whether the athlete is over-training. After a really hard training session or a race, I expect to read "hard work" or "tough but worthwhile" in the reaction column, and I would expect to find that the resting pulse is three or four beats higher the following morning. After an easy day the pulse would be back to normal and after a really long run it might even be lower than normal for three days, and the reaction column reads "still tired", "hard work" or "very tiring", then I know the athlete is over-training.

The weight column tells us more, as long as the weighing is done regularly on accurate scales at the same time of day. Once or twice a week is often enough, and the best time to weigh yourself is just before going training because a lot of weight can be lost as sweat, giving a misleading figure.

An increase is weight is almost certain to result in poorer performance in endurance events, but a drop in weight doesn't necessarily bring about an improvement - the athlete may have reduced his percentage of fat by increasing his training load, or he may have combined over-training and under-eating to such an extent that he is starting to break down muscle tissue. In hot climates one would expect the weight to drop at first and then to stabilise. After a long hard run the weight is bound to drop, and it should be brought back to normal before the next big effort.

In the first instance, using a diary acts just as a motivator - you are forced to go out training in order to look your diary in the face. After a few months the diary acts as a silent coach. You only have to look at it to find out whether you have been keeping to your schedule, whether you are running as many days a week as you intended or how much time you have lost through interruptions.

When you come to the end of a year, the diary proves really useful. Try it. Look at a year's record of training and answer the following questions:

Bruce Tulloh

continued from page 25

i On how many days in the year did you train or compete?

ii How many days were lost due to illness or injury?

iii Do you think that you would benefit by doing more training?

iv Do you think that you would benefit from doing less training?

v During which periods were you training hardest?

vi During which periods were you doing the least training?

vii During which periods were you competing most successfully?

viii Can you see any relationship between the answers to v, vi and vii?

After this, you need to analyse things in a more subtle way. The pattern one would expect to see is that hard training is followed by successful performance, but only at an interval of two to four weeks. It takes that time for the training to take effect. If you distinguish between high-intensity training and low-intensity training, as well as recording the volume done in each week, you can see which type of training produces the best results.

The problem is that no year is ever exactly the same. You are inevitably going to go through different phases, whatever type of training you do. Regular training will bring rapid improvement at first, followed by slower improvement over two or three years. You will then reach a plateau, which can only be surpassed by a change in training regime, and eventually you start to decline as age affects your performance.

It can be seen from the table that even without changing the amount of training it takes four or five years before the improvement curve flattens out. As I started training at the age of 19, it was only in the eighth year that I reached my peak over six miles. In my main event, the three miles / 5,000m, I continued to improve to the age of 25 and then stayed on a plateau. The 13.13 was actually set just after my 32nd birthday. Now that athletics is fully professional the "plateau of performance" can be maintained up to your mid-thirties at least.

When you are young, your diary is a sign of your progress. When you are older, your diary is an invaluable guide and motivator, and when you are old, it is, at the least, a nostalgic read. I can assure you that it will amply repay the trouble you take with it.

Your Letters

From Peter Coe

(first published in The Observer*).*

SIR - Some years ago, when the Australians felt that they were falling behind in their sporting achievements, their government established a national centre of excellence for all sports. The results have been impressive.

No British government would be so imaginative - it would probably give the Treasury the vapours - and the duty of safeguarding track-and-field athletics lies with the British Athletic Federation Limited. Historically their management skills have not kept pace with the modern world so that much of the time the problems of finance have reduced their stewardship to fire-fighting instead of implementing an effective long-term development plan.

The BAF's largest single source of revenue is from television. It is only world-class performances and the presence of genuine stars that will ensure a large viewing public and packed stadiums. The prerequisite for this is a pool of coaches of the highest quality, of whom we have far too few, and large enough to permit small groups and personalised coaching. I strongly suggest that the BAF produce a policy document which gives the highest priority to the rigorous monitoring of a long term plan.

I realised that career development required business skills, so the policy document of Coe & Co. embodied just such a monitored plan which lasted for 20 years. The proof of the effectiveness of this approach is in the Olympic and European gold medals and all the world records.

Management problems will always show. The later history of the old Board was bedevilled by the polarisation of promotions and coaching, never properly resolved, and the best sides of two important men, Andy Norman and Frank Dick, were lost to the sport.

Had the Board followed the recommendations of the Sports Council in 1989, Norman's scope would have been restricted and his undoubted expertise in the right areas could have been retained.

For whatever reasons, Dick is no longer head of coaching, but before he went he left us with a good idea: the elite athlete coaching scheme. But what has happened to that scheme and who is monitoring it?

I have learned extensively abroad, including Eastern Europe and the United States, on middle-distance coaching and training, at which I've been privileged to be successful, but outside of the British Milers Club, I have done almost nothing in England.

Therefore I was very happy to accept an appointment as co-ordinator of the South of England elite coaching scheme (North of Thames). It was set up to feed the coaches of designated athletes with the latest information, from the BAF coaching office and to deal with any special requests from the middle and long-distance coaches and to hold regular monthly meetings.

I had the time and was keen to do the job. Unfortunately, through no fault of mine, the scheme in the South got off to a very late start. With difficulty I finally got the addresses of the coaches involved updated; the BAF's register was not. Athletes described as being with one coach had moved to others, but I had not been advised of this.

Initially there were a few requests for information from some coaches, but only for what expenses and grants were obtainable or for lectures on special subjects which they didn't attend anyway. Except for a very few who were co-operative, *the rest seemed to think they knew it all.*

The idea of actually sitting down and sharing experiences, training information and anything new in sports science - in short, the very keys to success - was never mentioned. They either failed to turn up or excused themselves from monthly meetings by saying that they did not have the time because they were responsible for 30 or so other club athletes! Why take on roles that are mutually exclusive?

Sadly, before the end of the first year, I resigned. With my resignation I sent the BAF my apologies and the reasons why I felt I could not continue. This was received without a ripple. I was surprised, not out of any personal vanity, but simply because I thought that the collapse of a fine BAF initiative for distance running in an important geographical area would demand an explanation.

But is this the only initiative to sink without trace or major comment? What projects are up and running well? What has happened to Moorcroft, Cram *et al* and their project of an advisory panel for British middle-distance running? We hear

Your Letters

of what is started or projected, but not of any progress. Were their experiences similar to mine?

If the parts are not good then the sum, though possibly greater, won't amount to much. The health and security of our sport depend upon developing a high-level pool of the best coaches to secure its future. Their function must not be confused with that of the national event coaches who have greater monitoring and organisational roles.

From Wilf Paish

SIR - Thank you for the latest issue of the *BMC News*, which I always find refreshing to read, especially as the only other major publication devoted to our sport is so poor in the quality of articles that I have stopped taking it. This will mean that my complete collection, all of which I have purchased myself on the day of issue, stops at September 1994.

However, I do feel obliged to try to correct an aspect of really quite advanced biochemistry in the article "*Twelve things you should know about* Creatine". From time to time there are scientific articles that appear in the *BMC News*, the precise origin of which I can never find. Perhaps a bibliography would help in such circumstances.

I am fairly certain that the creatine which is now on sale is not phosphocreatine. Just this week alone, during a lecture at Oxford University, I was introduced to three forms of creatine. One box indicated that it was creatine monohydrate, another indicated that it was creatine monophosphate. The latter I had never heard of, and it might be just a gimmick to suggest that it is a form of phosphocreatine, an essential component of energy resynthesis in the mitochondria of the muscles.

I have tried very hard to find out the source of creatine that is available on the market, and always get the reply "it is imported". What I really want to know is how the creatine is manufactured. Presumably it is from an animal protein source? Creatine is synthesised in the liver; most of it is transported to the muscles where it is converted to creatine phosphate (phosphocreatine) by the enzymic action of creatine kinase. Hence this would appear to contradict your statement that the correct name for "creatine is phosphocreatine". I believe that what is purchased is a form of animal or vegetable protein. Creatine is an amino acid produced from the glycogenic amino acids, namely arginine, glycine (not glycerine as stated in your article *[Ed - the perils of a spell-checker!]*) and methionine.

Currently there is some research being performed that might indicate that vegetarians might not be at such a disadvantage, however the biochemistry of this is way beyond my comprehension at present and is related to something known as C3 and C4 plants.

Before all athletes start taking copious amounts of creatine, I think there is need for a lot more research to be done concerning the toxic effects of creatineuria and creatinine (metabolic by-products). Unfortunately the "more is better" syndrome will not apply here, and after the initial 'loading' period of 20gms per day for 5-6 days, 2gms per day will keep the circulating levels elevated.

I repeat, my main concern is the original source of the creatine. is it manufactured under the strictest 'health-risk' standards to make sure that the substance does not contain other organic products that could prove even more toxic? Incidentally creatine supplementation is nothing new and there is evidence that it has been tried twice, to my knowledge, since 1960.

If you ever run short of articles for the magazine, drop me a line! I like writing on all aspects of work physiology and related scientific aspects.

Wilf has accepted our invitation to become an 'Editorial Adviser' to the BMC News.

From Brian Boulton

SIR - Last September at Oxford I mentioned the question of the two-man 10 mile relay. I have looked into this and enclose a copy of details taken from *Athletics Weekly* dated 28th December 1963.

This confirms what I said about Fred Maillardet and I running 42:46 (with the last two miles in 8:16). In that race we beat John Herring and John Baldwin of Blackheath Harriers. The former (BMC member 109) represented GB at the Tokyo Olympics at 5,000m whilst the latter placed 17th in the ECCU Cross Country in 1966. On the day I think I ran rather well, as did Fred. This was in contrast to much of 1963 where most of my performances were erratic.

Top of the 1963 lists were a certain G D Ibbotson and A Booth with 42:37.2 at Blackburn on 28th August. Fred and I were second. As far as I have been able to ascertain, the best performance recorded is by Bruce Tulloh and Martin Hyman in 41:49.2 on 21st June 1962. During 1966 there were a number of performances by northern athletes in the 42 minutes range (42:13.0, 42:28.5, 42:32.0). Given a bit of time I could look through the *Athletics Weekly* results but it is a somewhat slow process having to look through so many copies!

These events seem to have died out in the mid to late 1960s. Someone must, I assume still hold the AW Trophy. Since a 440yds track is stipulated in the rules, to run the event today would entail adding about 2½ yards to a 400m circuit which can be done using movable edging.

On the first two occasions that I ran the relay I used to do a full lap with a lap rest. Fred and I teamed up to get 44:39.5 doing 440's on 10th September 1961 at Chelmsford. However, we found, as did others, that better results came from reps of 330yds with 110yds jog back. 42:46 equates to laps of 64.15 secs, i.e. 48.11 for 330yds. As you can calculate it works out at 26 reps plus 220yds each. There is a tendency, unless evenly matched, for the stronger athlete to do a bit more than the strict 330yds to lessen the partner's rep and provide a slightly longer recovery.

Fred and I were both BMC members at the time. While I have not seen him lately we remain in contact. I see John Baldwin quite frequently, and "Kipper" Herring on rare occasions. 42 minutes is attainable but it would be interesting to see how current athletes fare. Our events were of course on cinder tracks which in the winter months could get a bit soft. Derek Ibbotson ran in a number of the relays doing best times, and he could no doubt add a bit of glamour to what I have provided!

If there was sufficient interest I think I could persuade someone at Blackheath Harriers to put on one of these events again. I would need a little time to work on it.

We have asked Brian to try to arrange a two-man 10 mile relay for our Oxford Relays on September 2nd.

Lessons from Lanzarote 1995

by Matthew Fraser Moat

After the unqualified successes of the previous three years, it was somewhat inevitable that this year's trip to Lanzarote might fall a little short of expectations.

This year one or two things were different in the make-up of the group. For a start, this year we had a sponsor. Thanks to the generosity of Sports Tours of Manchester, we were able to assist a squad of quality athletes with their accommodation expenses. Unfortunately, because of the earlier date of the London Marathon, there were fewer 'good club athletes' along to swell the numbers.

The first thing that went wrong was that the application to the government scheme *Sports Match*, whereby every pound of new commercial sponsorship would be matched by the Government, was turned down. We met all the criteria, but in the end Sports Match had run out of money, and they turned us down on the grounds that we did not have enough children, disabled people or ethnic minorities! Our argument that seven Scottish athletes were an ethnic minority was not accepted! Having filled in 16 pages of forms, it was difficult not to feel let down.

Despite this, ten international athletes did receive assistance with their accommodation on the condition that they ran in all three races, and *tried hard*. The training plan was sent four weeks in advance of the trip, and was based on what had been used with success in previous years, admittedly with athletes who were less talented but more mature.

Older readers will remember the story when the GB women's team refused to do the session as proscribed by Frank and Harry Wilson at Merthyr Mawr. Well, something similar happened in Lanzarote, but at least the athletes had the decency to actually say in advance that they didn't want to do the sessions. "We've been doing 5k sessions all winter - we reckon we've got enough endurance. Can we do some more 800m sessions?" Less good was the non-attendance at the 10am lectures - "they are too early" came the complaint, and as for the 10k and aquathlon - "forget it".

However, this ignored the whole point of coming on such a trip, which is to actually try training in a different way. So, the sponsored group did their own sessions, which admittedly were of very high quality (e.g. 3 x 800m in 1:58, 3 x 500m in 65 secs with good rest), and at first Frank and I were prepared to give them the benefit of the doubt. Then things started going wrong for the sponsored group. Little niggling injuries started to occur, rumours of night-time exploits spread around the complex and generally the sponsored athletes became more and more knackered. One of them even tried to chat up the sponsor's lady friend!

Frank's own athletes of course trained to the original schedule. By the time of the Grand Prix, expectations of some great races had spread around the complex. Large crowds gathered to watch the 5,000m. Unfortunately, of the seven sponsored male athletes who had said that they had done enough 5k work during the winter, only one, the always magnificent Ian Gillespie, returning from two months out, was able to finish the 5,000m, in a very creditable time of 14:40. The rest either failed to line up on the startline, or dropped out during the race. The only person with a decent excuse was poor old Matthew Davies who had caught chicken pox on the first day of the trip!

In the 800m, after superb pace-making by Steve Mosley, Ewan Calvert ran a fine track record of 1:52.6, but only one other athlete, Grant Graham, was able to break two minutes. Ewan then beat a by then limping Ian Gillespie into second place in the mile. The Reebok Grand Prix, as in previous years, was decided on points awarded on finishing places in each of the three races. Ian Gillespie, therefore, won yet another BMC Grand Prix, and none of the other sponsored men made the top five! *All* of Frank's group were well placed.

In the Ladies Grand Prix it was a clean sweep for Serpentine. Wendy Sutherland-Llewellyn, despite missing three months winter preparation, showed that she was almost back to her best by winning the 5,000m and the Mile, and claimed first prize in the Grand Prix. Lynne Robinson won the 800m with 2:13.6, but as she did not run the other races, Liz Craig and Christina Robilliard of Serpentine were second and third ladies respectively.

Winners of the Men's Reebok Grand Prix - from left to right: Paul Deering, Tim Grose, Ian Gillespie, Mike Klisky and Volkmar Reinke. Photo by MFM

Winners of the Ladies' Grand Prix: Liz Craig, Wendy Llewellyn and Christina Robilliard. Photo by MFM

Star and victor ludorum of the fortnight was NUTS middle-distance compiler Tim Grose, the first person to join when the BMC reduced their admission standards in January. Despite having to put up with my snoring, he did *all* of Frank's sessions, won the 10k, won the aquathlon, came 4th in the Lanzarote Powerman (run-bike-run), did a storming cycle-leg in the triathlon to help Serpentine come second, won the Golf, and *still* came second overall in the Grand Prix!

Other highlights came from a marvellous video shot by Aage Klosterman of Club La Santa, where you can hear Frank dealing with some Germans who wouldn't clear the track ("Achtung, Achtung - you vill be shot!") and as ever we received marvellous support from Alan Zachariasen (2:11 marathoner) of the Green Team. Many thanks too must go to David 'Mr Fixit' McCreanney for all of his magnificent efforts, and to Eve Wilson for making special awards on behalf of the 'High Five' Club. Extra glamour was added by the presence of the Reebok *Athletics Weekly* Coach of the Year Jenny O'Shea and one of her athletes, Danny (no relation) O'Shea. And I achieved my ambition of actually winning a race, the 800m 'C' race!

Despite all the good things, the trip was ultimately disappointing. The standard of the races was actually lower in depth than last year despite having ten sponsored athletes all of whom are internationals. I'm sure the athletes involved would say that it is running 1:48 / 3:41 in the coming season that counts, and that races in March do not decide international selection. However the sponsors, Sports Tours and Reebok, wanted fast races, and were naturally not too happy. They feel that they did not get good value for money, and the BMC can only apologise to them.

So, what lessons can we learn from this? Firstly, the old, old lesson always quoted by Peter Coe that even 800m runners need regular 5,000m sessions throughout the year. Secondly that your typical fee-paying club athlete trains harder and more sensibly during the course of a fortnight than some sponsored elite runners. *If* we have a trip next year, sponsorship moneys will only be awarded after the trip, once all the race results are known!

Carol Sharp

A profile by Brian McAusland

Right now, in 1995, the top Scottish women middle-distance runners are Yvonne Murray and Liz McColgan, with Vicki McPherson not far behind. They are well known and recognised world-wide, and rightly so. But not so long ago, Carol Sharp was a regular feature of British teams and took part in major Grand Prix meets on the continent. She was not then, nor is she now, seen for the high quality athlete that she undoubtedly is.

Carole began jogging in 1977 when she started teaching. She only wanted to be a jogger but joined Shettleston Harriers who asked her to take part in an 800m race - she travelled to Stirling and turned in a performance of 3:03 for the distance, and then got caught up in racing.

She started training with former UK one mile champion and eight times Scottish Champion Graham Everett, and was part of an excellent group which included his daughter Andrea. Before long she received her first Scottish selection when she raced against England at Wolverhampton in 1978. By now she was running 2:14 - 47 seconds quicker than twelve months earlier!

Her first Scottish title of three over 800m was in 1981. After beating one of a famous pair of Scottish twins in her heat, she overheard a conversation which went as follows - question: "How did X get on?"; answer: "She was beaten by some scrubber!" This seemed to fire her up sufficiently to take the title.

In 1982 - a Commonwealth Games year - she got her first GB vest against Finland. Turning in times of 2:07 for 800m and 4:15 for 1,500m she raced the following day in Bislett where her time was 2:02 - one second ahead of Shireen Bailey. The BMC had set up a race the following week to help Shireen break two minutes for the distance, unfortunately before that race Carol had run at Grangemouth and had blistered her feet so badly that she could not take part in the race against Shireen.

Her talents were not confined to the outdoors - she obtained several indoor vests against France, Russia etc. In her own words, she loves / adores racing indoors. "There is a real sensation of speed coming off the bends, you have to concentrate harder on the shorter laps, there is more aggression and the whole thing is so much more intense." She loves track generally but really hates cross-country - she did it because she had to as part of the general strategy for the year, but did not have to like it! She can run well on the roads too, but "nothing compares to track running".

On one occasion she reckons she ran 52 x 300m in one week! Sessions included such as 10 x 300m with 3 minutes recovery, and two sets of 3 x 300m with 300m jog recovery. When she was training with Graham Everett, she did not know what the session was until she turned up at the track.

She married sprinter Cameron Sharp in 1983 and kept on racing, but it was very difficult because she was now working full time. There were injuries including stress fractures, and then a break from racing between 1987 and 1990 whilst she was starting a family, and, of course, Cameron had his terrible road accident in 1991.

She did manage to start racing again in 1992 and almost immediately her international career started up again - Athens '92, Israel '93 and Istanbul '94. She is currently struggling to get over a troublesome heel injury and it would take a brave man, or woman, to bet against her making it. She refuses to believe in the process of ageing and is not interested in veteran's racing - she would rather make the final of the AAA's than win a veteran's championship.

That is a definite aim, and if she can set an example to others she will. She is now into coaching as well as running; with her club coach award and the first part of the Senior Award successfully completed she has an idea about "Centres of Athletics Excellence", and is involved in a plan to create one in a Scottish state school which is being favourably looked upon.

As a coach she has a lot going for her; her experiences at the top of the athletics tree must be good. She has worked with some of the very best coaches in Britain, starting with Graham Everett, she owes a debt of gratitude to the doyen of Scottish sprint coaches Jimmy Campbell. She is currently being advised by Norman Brook, and of course there has been extensive contact with Frank Dick who coached Cameron. She is enthusiastic and ambitious, and is more than happy to be part of the system - it is difficult to see it being much longer before she has an official post within the Scottish coaching structure.

All Time UK Men's Lists

as at 1st April 1995

800m

1	Sebastian Coe	1:41.73	10-Jun-81
2	Steve Cram	1:42.88	21-Aug-85
3	Peter Elliott	1:42.97	30-May-90
4	Martin Steele	1:43.84	10-Jul-93
5	Thomas McKean	1:43.88	28-Jul-89
6	David Sharpe	1:43.98	19-Aug-92
7	Stephen Ovett	1:44.09	31-Aug-78
8	Gary Cook	1:44.55	29-Aug-84
9	Anthony Morrell	1:44.59	02-Jul-88
10	Ikem Billy	1:44.65	21-Jul-84
11	Stephen Heard	1:44.65	26-Aug-92
12	Curtis Robb	1:44.92	15 Aug-93
13	Matthew Yates	1:45.05	26-Aug-92
14	Andrew Carter	1:45.12	14-Jul-73
15	Chris McGeorge	1:45.14	28-Jun-83
16	John Gladwin	1:45.14	22-Jul-86
17	Rob Harrison	1:45.31	21-Jul-84
18	Kevin McKay	1:45.35	16-Aug-92
19	Neil Horsfield	1:45.44	28 Jul-90
20	Brian Whittle	1:45.47	20-Jul-90
21	Graham Williamson	1:45.6	12-Jun-83
22	Paul Herbert	1:45.64	05-Jun-88
23	Paul Forbes	1:45.66	08-Jun-83
24	Steve Crabb	1:45.69	18 Aug-84
25	Frank Clement	1:45.76	10-Jul-76
26	David Strang	1:45.85	13-Jun-92
27	Colin Campbell	1:46.1	26-Jul-72
28	Gary Marlow	1:46.13	27-Jul-88
29	Gareth Brown I	1:46.16	02 Jul 84
30	David Warren	1:46.20	29-Jun-80
31	Peter Browne	1:46.21	14-Jul-73
32	Chris Carter	1:46.30	04-Sep-66
33	Philip Lewis	1:46.30	27 Jan-74
34	Andrew Lill	1:46.37	28 Jun-92
35	John Boulter	1:46.5	18-Jun-66
36	Craig Winrow	1:46.54	15-Jul-94
37	Derek Johnson	1:46.6	09 Aug 57
38	Peter Hoffman	1:46.63	11-Jun-78
39	David Moorcroft	1:46.64	25-Jul-82
40	Stephen Caldwell	1:46.65	31-May-82
41	John Davies	1:46.7 *	03 Jun-68
42	Atlee Douglas	1:46.70	09 Jun-88
43	Malcolm Edwards	1:46.72	13-Sep-87
44	Robert Adams	1:46.8	09-Aug-69
45	David Cropper	1:46.8	01 Jul-73
46	David McMeekin	1:46.8	06-Jun-74
47	Colin Szwed	1:46.92	07-Aug-82
48	Mark Kirk	1:46.94	20-Jul-87
49	Brian Hewson	1:47.0	13-Sep-58
50	Michael Rawson	1:47.0	13 Sep-58
51	Nicholas Brooks	1:47.01	12-Apr-90
52	Philip Norgate	1:47.04	25-Jul-82
53	Paul Larkins	1:47.13	20-May-84
54	Paul Rowbotham	1:47.14	25-Jul-89
55	Gary Brown II	1:47.15	30 Jun-93
56	Paul Williams	1:47.17	14-Sep-91
57	Anthony Settle	1:47.2	16-Aug-75
58	John Griffiths	1:47.2	23-Aug-89
59	William Cornell	1:47.4 *	22-Jun-63
60	Robbie Brightwell	1:47.4 *	18 May 64

1500m

1	Steve Cram	3:29.67	16-Jul-85
2	Sebastian Coe	3:29.77	07-Sep-86
3	Stephen Ovett	3:30.77	04-Sep-83
4	Peter Elliott	3:32.69	16-Sep-90
5	Steve Crabb	3:33.34	04 Jul-87
6	David Moorcroft	3:33.79	27-Jul-82
7	John Robson	3:33.83	04-Sep-79
8	Matthew Yates	3:34.00	13 Sep-91
9	Graham Williamson	3:34.01	28-Jun-83
10	Anthony Morrell	3:34.1+	14-Jul-90
11	Adrian Passey	3:34.50	04-Jul-87
12	Mark Rowland	3:34.53	27-Jul-88
13	Neil Horsfield	3:35.08	10-Aug-90
14	John Gladwin	3:35.26	05 Sep-86
15	Jack Buckner	3:35.28	01 Jul-86
16	Frank Clement	3:35.66	12-Aug-78
17	Rob Harrison	3:35.74	26-May-86
18	Gary Lough	3:35.83	15-Jul-94
19	Paul Larkins	3:35.94	10-Jul-87
20	Kevin McKay	3:35.94	19 Jun 92
21	John Mayock	3:36.45	05 Sep-93
22	David Strang	3:36.53	15-Jul-94
23	Michael Kearns	3:36.91	26-Jul-77
24	Colin Reitz	3:37.55	27-Jun-85
25	Brendan Foster	3:37.64	02-Feb-74
26	Jason Dullforce	3:37.88	17-Jul-92
27	Rod Finch	3:37.97	30-Jul-93
28	Glen Grant	3:38.05	12-Aug-78
29	Timothy Hutchings	3:38.06	31-Aug-84
30	Tom Hanlon	3:38.08	28-Jun-92
31	James McGuiness	3:38.1	01-Aug-77
32	James Espir	3:38.2	01 Jul 89
33	Peter Stewart	3:38.22	15-Jul-72
34	Matt Barnes	3:38.31	23-Jul-93
35	Robert Denmark	3:38.34	28 Jun-92
36	Raymond Smedley	3:38.52	15-Jul-72
37	Curtis Robb	3:38.56	26-Jun-93
38	Simon Fairbrother	3:38.64	28-Jun-92
39	Ian Stewart II	3:38.65	08-Aug-81
40	John Kirkbride	3:38.68	15 Jul-72
41	James Douglas	3:38.78	27-Jun-72
42	Mark Scruton	3:38.78	17-Jun-84
43	Paul Lawther	3:38.8	12-Jun-77
44	Sean O'Neil	3:38.86	06-Jun-87
45	Ian Hamer	3:38 9	28-Jun-92
46	Brian Treacy	3:38.93	28-Aug-94
47	David Lewis	3:39.0	09-Aug-83
48	Andrew Keith	3:39.06	05 Jun-93
49	Alan Simpson	3:39.10	15-Aug-64
50	Ian Stewart I	3:39.12	01-Sep-69
51	Steve Green	3:39.19	28-Aug-94
52	David Clarke I	3:39.27	26-Jun-82
53	Stephen Halliday	3:39.29	10-Jun-90
54	John Whetton	3:39.4	20-Sep-69
55	Chris McGeorge	3:39.41	13-Aug-86
56	Michael Chorlton	3:39.43	17-Jun-84
57	Alistair Currie	3:39.43	19-Jul-85
58	Malcolm Edwards	3:39.57	08-Jul-88
59	Stephen Martin	3:39.62	18-Aug-88
60	Matthew de Freitas	3:39.66	30-Jul-93

Mile

1	Steve Cram	3:46.32	27-Jul-85
2	Sebastian Coe	3:47.33	28-Aug-81
3	Stephen Ovett	3:48.40	26-Aug-81
4	Peter Elliott	3:49.20	02-Jul-88
5	David Moorcroft	3:49.34	26-Jun-82
6	Graham Williamson	3:50.64	13 Jul-82
7	John Gladwin	3:51.02	19-Aug-87
8	Anthony Morrell	3:51.31	14-Jul-90
9	Jack Buckner	3:51.57	29 Aug-84
10	Steve Crabb	3:51.76	14-Aug-87
11	John Robson	3:52.44	11-Jul-81
12	Matthew Yates	3:52.75	10-Jul-93
13	Mark Rowland	3:52.99	10-Sep-86
14	Ian Stewart II	3:53.20	25-Aug-82
15	Kevin McKay	3:53.64	22-Jul-94
16	Gary Staines	3:53.82	12-Aug-90
17	Rob Harrison	3:53.85	15-Jul-86
18	Frank Clement	3:54.2	27-Jun-78
19	David Strang	3:54.30	22-Jul-94
20	Neil Horsfield	3:54.39	08-Jul-86
21	Timothy Hutchings	3:54.53	31-Jul-82
22	Adrian Passey	3:54.9	20-Aug-89
23	James McGuiness	3:55.0	11-Jul-77
24	Peter Stewart	3:55.3	10-Jun-72
25	Robert Denmark	3:55.38	12-Aug-90
26	Colin Reitz	3:55.41	31-Jul-82
27	John Mayock	3:55.57i	14-Mar-92
28	Alan Simpson	3:55.68	30 Aug-65
29	Brendan Foster	3:55 9	10-Jun-72
30	David Lewis	3:55.96	23-Aug 93
31	James Douglas	3:56.0	10-Jun-72
32	Mike Downes	3:56.04	25-Aug-82
33	Neill Duggan	3:56.1	11-Jun-66
34	Ian Hamer	3:56.19	05-Jul-91
35	Andrew Keith	3:56.29i	22-Jan-94
36	Stephen Martin	3:56.36	05-Aug-86
37	Mike McLeod	3:56.38	31-Aug-79
38	John Kirkbride	3:56.5	10 Jun-72
39	Paul Davies-Hale	3:56.5	20-Aug-79
40	Walter Wilkinson	3:56.6	31-May-71
41	Paul Larkins	3:56.65	17-Jul-87
42	James Espir	3:56.7	15-Aug-81
43	Chris McGeorge	3:56.71	05-Jul-88
44	Ian McCafferty	3:56.8	11-Jul-69
45	Simon Fairbrother	3:56.83	17-Aug-90
46	Ronald Speirs	3:56 9	30-Apr-77
47	Sean Cahill	3:56.95	31-Aug-79
48	David Clarke I	3:56.95	17-Jul-82
49	Alan Salter	3:56.99	09 Jul-85
50	Neil Ovington	3:57.07	11-Jul-86
51	Gary Taylor	3:57.15	05-Jul-88
52	Derek Ibbotson	3:57.2	19-Jul-57
53	Ian Stewart I	3:57.3	11-Jun-69
54	Colin Ridding	3:57.42	05-Jul-88
55	Barry Smith	3:57.46	08-Aug-80
56	Nick Rose	3:57.49	08-Aug-80
57	Michael Wiggs	3:57.5	05 Jul-65
58	Graeme Fell	3:57.5	01-Jun-83
59	Adrian Weatherhead	3:57.59	29-Aug 75
60	Geoffrey Turnbull	3:57.66	18-Jul-86

* converted from 880yds Any corrections and additions gratefully received by Matthew Fraser Moat, Ripple Court, Ripple, Deal, Kent CT14 8HX. Tel 01304 3797

All Time UK Women's Lists

as at 1st April 1995

800m

1	Kirsty Wade	1:57.42	24-Jun-85
2	Kelly Holmes	1:58.64	15-Aug-94
3	Diane Modahl	1:58.65	14-Jul-90
4	Shireen Bailey	1:58.97	15-Sep-87
5	Christina Cahill	1:59.05	04-Aug-79
6	Lorraine Baker-Strain	1:59.67	15-Aug-86
7	Paula Fryer	1:59.76	17-Jul-91
8	Ann Griffiths	1:59.81	10-Aug-94
9	Rosemary Wright	2:00.15	03-Sep-72
10	Anne Purvis	2:00.20	07-Jul-82
11	Cherry van der Zande	2:00.30	25-Jul-81
12	Beverley Hartigan	2:00.39	28-Aug-88
13	Zola Pieterse	2:00.55mx	21-Jun-86
14	Jane Finch	2:00.6	09-Jul-77
15	Yvonne Murray	2:00.80	10-Jul-87
16	Ann Brightwell	2:01.1 *	20-Oct-64
17	Lynne McIntyre	2:01.11	18-Aug-84
18	Joan Allison	2:01.2	01-Jul-73
19	Christine Whittingham	2:01.2	26-Aug-78
20	Christine Benning	2:01.24	28-Jul-79
21	Elizabeth Laban	2:01.35	10-Jul-76
22	Gillian Dainty	2:01.36	31-Aug-83
23	Janet Bell	2:01.40	10-Jul-87
24	Lesley Foley	2:01.48	11-Jun-77
25	Lillian Board	2:01.50	18-Sep-69
26	Teena Colebrook	2:01.65	21-Jul-84
27	Patricia Cropper	2:01.66	12-Aug-71
28	Ann Middle	2:01.7	28-Aug-91
29	Linda Keough	2:01.82	01-Aug-93
30	Helen Daniel	2:01.86	10-Jul-87
31	Dawn Gandy	2:01.87	19-Jun-88
32	Susan Bevan	2:01.93	19-Jul-91
33	Margaret Coomber	2:02.0	01-Jul-73
34	Jo White	2:02.0	13-Aug-77
35	Lynne Robinson	2:02.0	26-Jul-89
36	Sonya Bowyer	2:02.30	01-Jul-94
37	Lynn Gibson	2:02.34	14-Aug-92
38	Evelyn McMeekin	2:02.6	20-Aug-78
39	Janet Marlow	2:02.7	23-Jul-79
40	Suzanne Morley	2:02.79	27-Jul-85
41	Mary Kitson	2:02.83	21-Jul-91
42	Sheila Carey	2:02.9	10-Sep-71
43	Carol Sharp	2:02.91	07-Jul-82
44	Debra Russell	2:02.92	02-Aug-85
45	Mary Cotton	2:03.11	11-Jun-78
46	Cathy Dawson	2:03.17	26-Aug-94
47	Paula Newsham	2:03.18	17-Jun-78
48	Verona Elder	2:03.18	10-Jun-79
49	Joanna Latimer	2:03.27	29-Jun-94
50	Anne Smith	2:03.2a	02-Jul-66
51	Lisa York	2:03.30	12-Jul-92
52	Tonia Howland	2:03.44	05-Sep-87
53	Angela Creamer	2:03.48	23-Jul-86
54	Una English	2:03.5	20-May-92
55	Angela Davies	2:03.67	21-Aug-94
56	Wendy Sly	2:03.69	14-Jun-87
57	Tanya Blake	2:03.78	1994
58	Jackie Parker	2:03.78i	21-Feb-93
59	Alison Parry	2:03.88	14-Jul-91
60	Alison Wright	2:04.0	07-Sep-78

1500m

1	Zola Pieterse	3:59.96	30-Aug-85
2	Christina Cahill	4:00.57	06-Jul-84
3	Kirsty Wade	4:00.73	26-Jul-87
4	Yvonne Murray	4:01.20	04-Jul-87
5	Elizabeth McColgan	4:01.38	04-Jul-87
6	Kelly Holmes	4:01.41	12-Jun-94
7	Christine Benning	4:01.53	15-Aug-79
8	Shireen Bailey	4:02.32	01-Oct-88
9	Alison Wyeth	4:03.17	07-Aug-93
10	Wendy Sly	4:04.14	11-Aug-83
11	Sheila Carey	4:04.81	09-Sep-72
12	Beverley Hartigan	4:05.66	20-Jul-90
13	Lynn Gibson	4:05.75	20-Jul-94
14	Lynne McIntyre	4:05.96	20-Aug-84
15	Mary Cotton	4:06.0	24-Jun-78
16	Christine Whittingham	4:06.24	05-Jul-86
17	Monica Joyce	4:06.69	18-Aug-82
18	Janet Marlow	4:07.11	18-Aug-82
19	Ann Griffiths	4:07.59	08-Jun-92
20	Teena Colebrook	4:07.69	19-Aug-90
21	Gillian Dainty	4:07.90	06-Jun-84
22	Lisa York	4:09.26	13-Jun-92
23	Angela Davies	4:09.29	20-Jul-94
24	Joyce Smith	4:09.37	07-Jul-72
25	Karen Hutcheson	4:09.46	04-Sep-89
26	Penelope Forse	4:09.5	06-Aug-80
27	Maxine Newman	4:10.07	28-Jun-92
28	Cherry van der Zande	4:10.10	30-Aug-81
29	Kathryn Carter	4:10.21	31-Jul-82
30	Lynne Robinson	4:10.32	29-Jul-94
31	Jo White	4:10.41	10-Jun-84
32	Joan Allison	4:10.7	02-Feb-74
33	Sonia McGeorge	4:10.75	10-Jul-90
34	Ruth Partridge	4:10.76	16-Jun-84
35	Suzanne Morley	4:11.0	06-Jul-85
36	Bridget Smyth	4:11.12	26-May-85
37	Paula Fudge	4:11.23	31-Jul-81
38	Nicola Ann Morris	4:11.24i	07-Jan-89
39	Ursula McKee	4:11.46	20-Jan-90
40	Jane Shields	4:11.51	04-Sep-83
41	Paula Radcliffe	4:11.6	20-Jun-93
42	Deborah Peel	4:11.75	31-Jul-82
43	Alison Wright	4:11.68	15-Aug-79
44	Una English	4:11.82	28-Jun-92
45	Jo Dering	4:11.85	28-Jul-90
46	Lorraine Baker-Strain	4:11.94	05-Jul-90
47	Gillian Settle	4:12.19	26-May-85
48	Diane Modahl	4:12.3	29-Apr-89
49	Susan Parker	4:12.3	20-Jun-93
50	Glynis Penny	4:12.54	19-Aug-74
51	Carole Bradford	4:12.58	10-Jun-84
52	Debbie Gunning	4:12.69	16-Jul-90
53	Rita Ridley	4:12.7	15-Aug-71
54	Regina Joyce	4:12.7	17-May-81
55	Hilary Hollick	4:12.72	12-Aug-78
56	Julie-Ann Laughton	4:12.79	10-Jun-84
57	Kim Lock-Harris	4:13.12	11-Aug-82
58	Jayne Spark	4:13.62	30-Jul-93
59	Sandra Arthurton	4:14.0	05-May-84
60	Roisin Smyth	4:14.10	16-Jul-90

Mile

1	Zola Pieterse	4:17.57	21-Aug-85
2	Kirsty Wade	4:19.41	27-Jul-85
3	Christina Cahill	4:22.64	07-Sep-84
4	Yvonne Murray	4:22.64	22-Jul-94
5	Christine Benning	4:24.57	07-Sep-84
6	Alison Wyeth	4:24.87	06-Jul-91
7	Elizabeth McColgan	4:26.11	10-Jul-91
8	Teena Colebrook	4:26.16	14-Jul-90
9	Beverley Hartigan	4:26.52	14-Aug-92
10	Lisa York	4:27.80	14-Aug-92
11	Wendy Sly	4:28.07	18-Apr-84
12	Karen Hutcheson	4:28.8	20-Aug-89
13	Suzanne Morley	4:29.15	18-Aug-84
14	Lynne McIntyre	4:30.08	07-Sep-84
15	Jane Shields	4:30.29	09-Sep-83
16	Monica Joyce	4:30.4	12-Jun-82
17	Ruth Partridge	4:30.89	18-Aug-84
18	Lynn Gibson	4:31.17	01-Jul-94
19	Jo White	4:31.24i	05-Feb-83
20	Shireen Bailey	4:31.45	17-Sep-89
21	Gillian Dainty	4:31.65	26-Jun-82
22	Angela Davies	4:31.83	01-Jul-94
23	Carole Bradford	4:32.00	18-Aug-84
24	Debbie Gunning	4:32.32	05-Jul-91
25	Lynne Robinson	4:32.91	14-Aug-92
26	Una English	4:33.01	14-Aug-92
27	Ann Griffiths	4:33.12	24-May-92
28	Janet Marlow	4:33.2	14-Sep-79
29	Regina Joyce	4:34.16	16-May-82
30	Mary Cotton	4:34.3i	11-Feb-79
31	Nicola Ann Morris	4:34.7	20-Aug-89
32	Deborah Peel	4:34.70	18-Aug-84
33	Diane Modahl	4:35.32	24-May-92
34	Sonia McGeorge	4:35.7	07-May-89
35	Joan Allison	4:36.18	14-Jul-73
36	Paula Radcliffe	4:36.4e	22-Aug-93
37	Penelope Forse	4:36.48	26-Jun-77
38	Anne Smith	4:37.0	03-Jun-67
39	Alison Wright	4:37.06	08-Jul-79
40	Andrea Whitcombe	4:37.06	16-Jul-91
41	Sheila Carey	4:37.2	14-Sep-73
42	Rita Ridley	4:37.4	03-Jul-71
43	Maxine Newman	4:37.67	25-Jun-94
44	Kim Lock-Harris	4:37.7	14-Aug-82
45	Roisin Smyth	4:37.73	20-Jun-90
46	Susan Parker	4:37.82	25-Jun-94
47	Bridget Smyth	4:37.88	08-Aug-86
48	Marcella Robertson	4:38.0	14-Jul-85
49	Paula Fudge	4:38.08	16-May-79
50	Hilary Hollick	4:38.1	30-Jul-77
51	Jo Dering	4:38.14	22-Jul-94
52	Bernadette Madigan	4:38.24	09-Sep-79
53	Christine Price	4:38.3	14-Jul-85
54	Kathryn Carter	4:38.30	10-Jul-87
55	Angela Tooby	4:38.39	14-Aug-87
56	Glynis Penny	4:38.5	14-Sep-79
57	Hayley Haining	4:38.71	16-Jul-91
58	Cherry van der Zande	4:38.8	30-Jul-77
59	Ursula McKee	4:38.86	07-Jan-90
60	Andrea Wallace	4:38.9	05-May-90

* converted from 880yds Any corrections and additions gratefully received by Matthew Fraser Moat, Ripple Court, Ripple, Deal, Kent CT14 8HX. Tel 01304 3797

British Milers' Club - 1995 Fixtures

For members only - all races will be paced and there will be separate races for Men and Women

BMC Championships

Matthew Fraser Moat 01304 379777

Heats and Finals along the lines of the former UK Championships.
Please register by May 29th

10th & 11th June	Loughborough	M800, W800 M1500, W1500 M3000, W3000 M10000, W10000

BMC National Squad Races

Matthew Fraser Moat 01304 379777

These meetings will be in the style of the sadly missed "Reebok Challenge".
Please register 8 days before each meeting.

17th May	Wythenshawe	M800, W800 M1500, W1500
27th May	Crawley	M800, W800 M1500, W1500 M5000, W5000
24th June	Cardiff	M800, W800 M1500, W1500 M5000, W5000
5th July	Grangemouth	M800, W800 M1500, W1500 M3000, W3000
18th July	Stretford	M1000, W1000 M Mile, W Mile M5000, W5000
9th Aug	Watford	M800, W800 M1500, W1500 M3000, W3000
20th Aug	Solihull	M800, W800 M1500, W1500 M5000, W5000
2nd Sept	Oxford Relays	M4x800 W4x800 M4x1Mile W4x1Mile
10th Sept	Bristol Road Miles	M Mile W Mile

BMC National U18 Races

David Iszatt 0121 471 4080

Travelling expenses for certain selected U18 athletes will be met by the Foundation for Sport and the Arts

8th May	Millfield	JM800, JW800 JM1500, JW1500
17th May	Wythenshawe	JM800, JW800
10th June	Loughborough	JM800, JW800 JM1500, JW1500
24th June	Cardiff	JM800, JW800
5th July	Grangemouth	JM800, JW800
18th July	Stretford	JM Mile, JW Mile
20th Aug	Solihull	JM800, JW800

BMC North West

Mike Harris 0161 499 1901

25th Apr	Stretford	M1500, W1500
18th May	Stretford	M5000, W5000
6th June	Stretford	M1500, W1500
27th June	Stretford	M800, W800
18th July	Stretford	National Squad
1st Aug	Stretford	M1500, W1500
22nd Aug	Stretford	M800, W800
5th Sept	Stretford	M800, W800 M1500, W1500

BMC North East

Phil Hayes 0191 482 2253

14th June	Jarrow	M1500, W800
25th June	Gateshead	M600, W600 M1000, W1000
19th July	Jarrow	M800, W1500
2nd Aug	Gateshead	M1500, W800

Michael Gooch 01472 358809

27th May	Grimsby	M800
28th Aug	Scunthorpe	M Mile, W Mile

BMC South West

Mike Down 0117 973 3407

8th May	Millfield	M1000, W1000 M3000, W3000
2nd Aug	Cheltenham	M800, W800 M3000, W3000

Post Office Counters SW Grand Prix

31st May	Bath	M Mile W Mile
24th June	Cardiff	M1500
9th July	Salisbury	M1500
27th Aug	Exeter	M Mile
2nd Sept	Oxford	M Mile
3rd Sept	Southampton	M Mile
10th Sept	Bristol	National Squad

BMC East

Ian Chalk 01582 769336

10th May	Bedford	M Mile, W1500

Eastern Region Grand Prix

2nd July	Kings Lynn	M1500
19th July	Bedford	M800
26th July	Milton Keynes	M1500
9th Aug	Watford	National Squad
15th Aug	Ipswich	M800
28th Aug	Welwyn	M1500

BMC Midlands

David Iszatt 0121 471 4080

26th Apr	Birmingham	M800, W800
31st May	Solihull	M1500, W1500
28th June	Rugby	M1500, W1500
26th July	Solihull	M800, W800
20th Aug	Solihull	National Squad
23rd Aug	Telford	JM800, JW800

BMC South

Ray Thompson 01737 554450

Sponsored by SweatShop

31st May	Crystal Palace	M800, W800
14th June	Tooting Bec	M1500, W1500
5th July	Tooting Bec	M800, W800
19th July	Sutton Arena	M Mile, W Mile
2nd Aug	Tooting Bec	M800, W800
23rd Aug	Tooting Bec	M1500, W1500

John Sullivan 0171 790 1961

3rd May	Highgate	M800, W800
7th June	Highgate	M800, W800
5th July	Highgate	M1500, W1500
2nd Aug	Highgate	M800, W800
6th Sept	Highgate	M800, W800

Alan Turner 0181 998 9335

17th May	Perivale	M3000, W3000
21st June	Perivale	M1500, W1500
12th July	Perivale	M800, W800
23rd Aug	Perivale	M800, W800
13th Sept	Perivale	M Mile, W Mile

Tim Brennan 01753 535073

21st May	West London	M800, W800
13th Aug	West London	M800, W800
17th Sept	Sutton Arena	M800, W800

BMC Devon & Cornwall

Roger & Barbara Lock 01503 250673

10th May	Cambourne	M800, W800
8th June	Cambourne	M1500, W1500
4th July	Cambourne	M800, W800
26th July	Cambourne	M800, W800 M3000, W3000
7th Sept	Cambourne	M Mile W Mile

BMC Wales

Mark Bryant 01656 880809

10th May	Cwmbran	M800, W800
7th June	Cardiff	M1500, W1500
24th June	Cardiff	National Squad
19th July	Swansea	M5000, W5000
26th July	Barry	M1500, W1500

BMC Scotland

Brian McAusland 01360 550680

3rd May	Grangemouth	M800, W800
7th June	Grangemouth	M1500, W1500
5th July	Grangemouth	National Squad
2nd Aug	Grangemouth	M1500, W1500

BMC Northern Ireland

Malcolm McCausland 01504 42583

14th June	Antrim	M800, W800
28th June	Antrim	M1500, W1500
26th July	Londonderry	M3000, W3000
16th Aug	Londonderry	M1000, W1000
17th Sept	Londonderry	M Mile W3000

The dates and venues of the races must be regarded as provisional, so you are advised to check with the Regional Secretary at least seven days before. From 1st January 1995, BMC qualifying times for seniors are M800 1:56.0, M1500 3:56.0, W800 2:20.0, W1500 4:45.0. Qualifying times for U17 athletes are M800 2:10.0, M1500 4:30.0, W800 2:25.0, W1500 5:00.0.

BMC Membership is limited to those athletes who have achieved the required qualifying times, and to Senior BAF Coaches. All applications to join the BMC should be sent to the Membership Secretary, Andy Anderson, 75 Chichester Road, North End, Portsmouth, Hampshire PO2 0AB, enclosing a large SAE. Annual subscriptions are £10, and there is a £10 joining fee to cover the cost of a BMC vest.