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BMC

BMC NEWS

Official Journal of the British Milers' Club

VOLUME 3 ISSUE 3

SPRING 1997 £6.00

NIKE has pledged to sponsor the BMC for 3 years.

The main feature is a five race national grand prix.

Photo by Mark Shearman

Two new surprise BMC members John Ridgeon and Mark Richardson with Noel Levy

The British Milers' Club

sponsored by Nike

Founded 1963

BMC VISION 2000

"to strive to win all four middle-distance gold medals for Britain in the 2000 Olympics and at each successive games"

OFFICERS

President	Dr. Norman Poole
Chairman	Lt. Col. Glen Grant
Vice-Chairmen	Maureen Smith Matthew Fraser Moat
National Secretary	Ian Chalk, 8 Mary Proud Court, Oaklands, Hertfordshire, AL6 0XG.
Treasurer	Pat Fitzgerald, 47 Station Road, Cowley, Uxbridge, Middlesex UB8 3AB.
Membership Secretary	William Anderson, 49 Paulsgrove Road, North End, Portsmouth, Hampshire PO2 7HP.
National Committee	Frank Horwill, BMC Founder 1963, Phil Banning, Val Brandon, Peter Coe, Tim Grose, David Iszatt, James Mayo, Philip O'Dell, Peter Thompson and all Race Organisers.
Honorary Auditor	Mike Rezin

RACE ORGANISERS

NATIONAL GRAND PRIX		
M800, M1500	Matthew Fraser Moat	01304 379777
W800, W1500	Glen Grant	01252 626183
National Event Coach	Norman Poole	0161 980 8358
BA ENDURANCE INITIATIVE		
BMC Director	Mike Down	0117 973 3407
GOLD STANDARD MEETINGS		
Stretford	Mike Harris	0161 499 1901
Watford	Tim Brennan (Men)	01753 535073
	Pat Fitzgerald (Women)	01895 234211
Loughborough	George Gandy	01509 230176
REGIONAL SECRETARIES		
Scotland	Brian McAusland	01567 830331
	Alex Naylor	01236 726061
Wales	Mark Bryant	01656 880809
Northern Ireland	Malcolm McCausland	01504 49212
East	Ian Chalk	01438 714487
Midlands	Bud Baldaro	0121 429 6579
North East	Phil Hayes	0191 265 2984
	Michael Gooch (Humberside)	01472 358809
North West	Mike Harris	0161 499 1901
South West	Mike Down	0117 973 3407
Southern Counties	Ray Thompson (Rosenheim)	01737 554450
	Ron Allison (Sutcliffe Pk)	0181 858 9380
	Dave Pamah (Battersea Pk)	0171 916 6764
	John Sullivan (Finsbury Pk)	0171 790 1961

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.

BMC News Editor	Dr. Tim Grose, 31 Odette Gardens, Tadley, Hampshire RG26 3PS. Tel: 0118 982 0959.
Editorial Advisors	Matthew Fraser Moat Frank Horwill
Distribution	June Lee

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 athletes who have achieved the required qualifying times, and to 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, preference in BMC race-seeding, travel expenses to certain BMC races and access to FSA funds.

All applications to join the BMC should be sent to the Membership Secretary with a cheque for £20 (£25 overseas) stating vest size and enclosing an A4 SAE. Annual subscriptions of £10 (overseas £15) are due 1st January each year and should be sent to the Treasurer.

MERCHANDISE

BMC vests (gold/white - S/M/L/XL - £10), BMC T Shirts (S/M/L/XL - £10) and BMC ties (£5) are available from the Membership Secretary, William Anderson. 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 an A4 SAE.

INTERNET

BMC E-Mail Address	bmc@british-athletics.co.uk
BMC Web Site	http://www.british-athletics.co.uk/bmc/
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Tim Grose	groset@logica.com

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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	n/a	n/a
Veterans	2:10.0	4:30.0	n/a	n/a
Senior Women	2:20.0	4:45.0	2:12.0	4:30.0
Under 17	2:25.0	5:00.0	n/a	n/a
Veterans	2:25.0	5:00.0	n/a	n/a

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CHAIRMAN'S NOTES

The BMC has signed a three-year sponsorship deal with NIKE effective 1st March 1997. The primary purpose of the sponsorship is to provide support for the BMC Vision 2000, in particular the National Grand Prix.

The sponsorship comprises financial support, apparel and technical assistance for all levels of the BMC. John Gladwin will be the principal co-ordinator on behalf of NIKE and we hope to see him at many of our meetings this summer.

John, BMC member 1466, joined the BMC in 1980 and broke 4 minutes for the mile in a BMC race at Carlisle in 1987. He is best known for his 1,500m silver medal at the 1986 Commonwealth Games behind Steve Cram.

We wish to express our thanks to Peter Thompson for his hard work on behalf of the BMC in securing this sponsorship.

BMC / NIKE GRAND PRIX

There will be two Grand Prix categories covering 800m, 1,500m and 1 Mile - one for men and one for women, each with overall prize money of £1,600.

There will be four Grand Prix meetings and a final. At each GP meeting there will be four events, M800, W800, M1500, W1500. At the Grand Prix Final, the 1,500m will be replaced by a Mile.

The overall prizes in each Grand Prix are: first £600, second £400, third £300, fourth £200, and fifth £100. Lower places will receive kit prizes. The meetings are:

Wed 14th May	Wythenshawe
Tue 3rd June	Loughborough
Wed 25th June	Watford
Thu 7th Aug	Swindon
Sat 6th Sep	Bristol (GP Final)

There will be prizes of £250 for each event at each meeting - first prize being £100, second £75, third £50 and 4 £25. An athlete that wins all five events could therefore win £1,100.

A bonus of £100 will be paid to any BMC member who breaks the BMC members' record with a winning performance at a BMC / NIKE Grand Prix Meeting. Current records are:

M800	1:47.7	Seb Coe 1976
	1:47.7	Robin Hooton 1996
M1500	3:39.1	Neil Caddy 1996
M Mile	3:56.35	Anthony Whiteman 1996
W800	2:03.0	Kirsty Wade 1982
W1500	4:10.7	Sonya Bowyer 1996
W Mile	4:37.4	Rita Ridley 1971

GRAND PRIX FINAL

The BMC / NIKE Grand Prix Final will be held on the 6th September at Bristol over 800m and one Mile and points can be scored towards the overall BMC / NIKE Grand Prix in the same way as other rounds. To qualify for the 'A' race in your chosen event, you should be:

i. in the Top 10 of the overall Grand Prix standings after the meeting on August 7th
ii. or have won an 'A' race at any of the Grand Prix meetings.

Remaining places will be decided on the current national rankings.

GRAND PRIX SCORING

Points can be scored at any distance in the four BMC / NIKE Grand Prix meetings and the final, the best four meeting scores counting towards the overall mens' and womens' Grand Prix.

The points system will be similar to the system used by Mike Down in his South West Grand Prix for 10 years. Equal points will be available for "time" and "position", 21pts being the notional maximum for each category.

First place will count 20 points, 2nd place 19 points, 3rd place 18 points down to 1 point for 20th place. "Positions" will be decided on time, taking all races in account, but the winner of any race, 'A', 'B', 'C' etc., will get a 1 point bonus.

"Time" points will be awarded as follows:

	21pts	*step*	**1pt**
M800	1:46.0	*2sec*	1:56.0
W800	2:00.0	*1 sec*	2:20.0
M1500	3:36.0	*1 sec*	3:56.0
W1500	4:05.0	*2 secs*	4:45.0
M Mile	3:54.0	*1 sec*	4:14.0
W Mile	4:25.0	*2 secs*	5:05.0

The "21 points level" is approx. world Top 50 standard and the "1 point level" is our BMC entry standard. Times will be rounded "down" to the "step" below that time, thus an 800m in 1:47.7 would score 17 points and 1:55.7 would score 1 pt.

The difference in the steps between men and women is to allow for the reduced depth in womens' events.

An athlete who runs faster than the 21 point level will receive extra points on a linear basis. An athlete may also include one score from an BA Endurance Initiative race at a BMC/NIKE Grand Prix meeting.

Matthew Fraser Moat will calculate the Grand Prix scores and will give regular updates to *Athletics Weekly* and to BMC members via E-Mail.

GRAND PRIX ENTRIES

All BMC Members are eligible and encouraged to enter the BMC / NIKE Grand Prix, and can vary events between rounds.

Athletes are asked to register with the meeting organiser 8 days before the event. As start-lists and seeding will be done 48 hours before the meeting, Grand Prix entries will not be accepted on the day.

Entry fees for members are £2 per race. Non-members and members behind with their subscriptions will be allowed to run but their entry fee will be £5 per race.

Overseas athletes will be allowed to run at the discretion of the BMC.

GRAND PRIX SEEDING

Race seeding will be done by the meeting organiser in conjunction with the Treasurer Pat Fitzgerald and the BMC Committee. In case of dispute, current BMC merit rankings will be used.

Promising U23 athletes will be given priority in the seeding and any athlete that wins the 'B' race in a BMC / NIKE Grand Prix meeting will be given the option to run in the 'A' race in the next round.

BA ENDURANCE INITIATIVE

Malcolm Arnold has asked Mike Down, representing the BMC, to co-ordinate the race programme for the BA Endurance Initiative (BAEI), working mainly within our BMC race programme.

The BAEI Grand Prix will therefore be held during the following meetings:

Wed 30th April	Watford Relays
Mon 5th May	Millfield
Wed 14th May	Wythenshawe
Sun 18th May	Loughborough *(v AAA's)*
Sun 18th May	Stevenage
Sun 25th May	Bedford
Tue 3rd June	Loughborough
Wed 25th June	Watford
Thu 7th Aug	Swindon
Sat 6th Sep	Bristol (GP Final)

Points will be scored on the same basis as the BMC National Grand Prix.

	21pts	*step*	**1pt**
M3000	7:40.0	*22 secs*	8:30.0
W3000	8:50.0	*5 secs*	10:30.0
M5000	13:20.0	*5 secs*	15:00.0
W5000	15:00.0	*10 secs*	18:20.0
M10000	27:40.0	*10 secs*	31:00.0
W10000	31:40.0	*20 secs*	38:00.0

There will also be at least one BAEI regional race per BMC Region. For further details please contact your Regional Secretary or Mike Down on 0117 973 3407.

OVERALL BMC RACE PROGRAMME

Our 1997 Race Programme is designed to build on the successes of last year and will be

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once again in three tiers:
i. BMC/Nike Grand Prix
ii. BMC Gold Standard Meetings
iii. BMC Regional Races

In addition to the above, the BMC are launching two series of invitation races:
i. BMC "Mile of Miles"
ii. BMC "Record Breakers

For further details see below.

GOLD STANDARD MEETINGS

Put on in conjunction with the promoting clubs, these meetings take place every two or three weeks to provide high class races in preparation for championships and the BMC / Nike Grand Prix. These meetings are open to all members but BMC Gold Standard members, i.e. sub 1:52/3:49/ 2:12/4:30, will find the 'A' races paced appropriately.

Stretford	Mike Harris	0161 499 1901
Watford	Tim Brennan	01753 535073
	Pat Fitzgerald	01895 234211
Loughborough	George Gandy	01509 230176

These meetings will always include high quality 3k races.

REGIONAL RACES

For BMC members, i.e. sub 1:56/3:56/2:20/4:45 (M800/M1500/W800/ W1500) athletes, paced BMC races will take place at the following venues:

Rosenheim Lg.	Ray Thompson	01737 554450
Finsbury Park	John Sullivan	0171 790 1961
Battersea Park	Dave Pamah	0171 916 6764
Sutcliffe Park	Ron Allison	0181 858 9380
Midlands	Bud Baldaro	0121 429 6579
North East	Phil Hayes	0191 265 2984
Humberside	Michael Gooch	01472 358809
Wales	Mark Bryant	01656 880809
Scotland	Brian McAusland	01567 830331
N Ireland	Malcolm McCausland	01504 49212

BMC MILE OF MILES

Local sponsors have provided prize money for Mile races in the "Mile of Miles" including bonuses for performances under 4:00 (men) and 4:40 (women).

Sun 20th Apr	Luton Road Miles
Sun 18th May	Stevenage
Sun 15th Jun	Ipswich
Wed 18th Jun	Bath
Wed 9th July	Bedford
Tue 29th July	Exeter
Sun 7th Sept	Bristol Road Miles

This series effectively succeeds the very successful South West and Eastern Region Grand Prix which have been so successful in recent years. The BMC will put up further prize money of £100 for U23s and juniors, male and female, for the most wins (in their own age group) throughout the summer. To enter for Bath, Exeter and Bristol, please register with Mike Down on 0117 973 3407 and for all others with Ian Chalk on 01438 714487.

BMC RECORD BREAKERS

The "Record Breakers" series will attempt to set new BMC Records at mainly "non-standard" distances at the following venues:

Sat 19th Apr	600m	Battersea Park
Mon 5th May	2 Miles	Millfield
Sun 18th May	1,000m	Loughborough
Sat 31st May	2,000m	Cardiff
Sun 15th June	800m	Battersea Park
Wed 13th Aug	1,200m	Watford

Prize money of £100 will be awarded at each race where a new BMC "members" record is set. Men's records are currently:

M600	1:18.5	Steve Ovett 1976
	1:18.5	Andy Knight 1996
M1000	2:22.0	Richard Lynch 1992
M1200	2:57.0	Paul Williams 1978
M2000	5:11.0	Walter Wilkinson 1972
M2 Miles	8:44.6	Alan Blinston 1970

and the women's records are:

W600	1:31.3	Rachel Jordan 1996
W800	2:03.0	Kirsty Wade 1982
W1000	2:44.9	Jo White 1980
W1200	3:23.4	Christine Ward 1977
W2000	6:22.2	Paula Yeoman 1971
W 2 Mile	no mark under 10:30	

It is recognised that some of these records are "soft" and therefore the £100 will be split between all athletes that record a time inside the mark listed above. To enter, please register with Matthew Fraser Moat on 01304 379777 or the local race organiser.

BMC RELAY MEETINGS

Eight world best performances have been set in BMC meetings in 4 years. 4x1,500m relays will take place at Watford on Wednesday 30th April.

Records under attack will include the BMC's own world junior men's record of 16:03.2 and the BMC's world veterans' record of 17:21.0.

Women's records under attack are BMC's own British and Commonwealth record of 18:12.1, the BMC's British and European junior record of 19:06.7 and the world Junior Record of 18:52.5. It is hoped to set an inaugural women's world veterans record.

BMC Junior Men's teams now hold the complete set of the world relay records from 4x800m to 4x1 Mile. It is hoped that the Junior Women will do the same in 1997, and to that end a Junior 4x1 Mile Meeting is planned at Watford on Wednesday June 11th.

BMC CHAMPIONSHIPS

Due to the congestion and late changes within the national fixtures list, it has not yet proved possible to find a suitable weekend date to hold the BMC Championships in a heats and finals format in 1997. If a suitable date emerges, members will be informed by letter, but at the moment BMC Champions for 1997 will be the athletes who set the fastest times in the 800m and Mile races at the Grand Prix Final.

PACESETTERS

Further to Appendix II of *BMC Vision 2000*, which concerned BMC Athletes' Support, we have been approached by PaceSetters Ltd with a view to representing BMC athletes overseas.

BMC Vision 2000 stated the levels of service required in a contract with a commercial organisation and PaceSetters have stated that they wish to work to that brief. PaceSetters is being fronted by Tim and Sharon King, both long-standing members of the BMC. The PaceSetters Mission Statement reads:

"PaceSetters Ltd is being set up to offer a complete service to up-and-coming athletes, managing their promotional activity as they climb the international ladder. All actions taken on behalf of the athlete will be taken for the good of the athlete not for the financial benefit of PaceSetters Ltd. The philosophy of all business transactions will be "Open" and "Upfront", building a reputation of honesty and of "looking after the athletes interests' first and foremost."

On this basis the British Milers' Club is prepared to endorse PaceSetters for a one-year trial period.

DRUG FREE COMPETITION

The BMC is committed to drug-free competition in a drug-free sport. Whilst there are few middle-distance runners who would take steroids there are rumours that some athletes have taken human growth hormone in an attempt to cheat their fellow competitors.

Anyone having knowledge of any middle or long distance runner guilty of taking steroids or growth hormone in the UK or abroad is asked to pass this information to the BMC Chairman Glen Grant. Information will be treated in the strictest confidence.

1997 NATIONAL TRAINING DAY

It is intended to hold this at the Army School of Physical Training, Aldershot. The format will be a physical test / training day with group discussions with senior coaches afterwards. For further details please contact Glen Grant.

100 x 1 MILE RELAYS

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Next autumn it is hoped to attempt to break the world 100 x 1 mile records which currently stand at 7:53:52.1 (men) and 10:15:29.5 (women)

NATIONAL ENDURANCE WEEKEND

The sixth National Endurance Weekend will take place next November. For further details please contact Norman Poole on 0161 980 8358.

1997 ANNUAL GENERAL MEETING

This will be held in September / October. For further details please contact Ian Chalk on 01438 714487.

CONGRATULATIONS

Congratulations to the following long-standing BMC members who achieved great things this spring.

i. ***Andy Hart,*** undisputed British number one over 800m indoors this season, went to the world indoor championships and was third in Kipketer's world-record heat.

ii. ***Michelle Faherty*** achieved a lifetime pb at the Ricoh Games in Birmingham to qualify for the world indoor championships, only to meet Maria Mutola in the first round!

iii. ***Ben Reese*** studying in Michigan ran 3:59.82 indoors for the mile on 14th February just behind BMC "All-Time" 800m record holder Paul McMullen.

BMC WEB SITE

The BMC now has its own internet site courtesy of CG Systems of Barnet. It is: **http://www.british-athletics.co.uk/bmc/** and contains full 1996 BMC Ranking Lists and the latest 1997 fixtures. As the summer progresses the site will be updated with the 1997 Ranking Lists and the overall standings in the BMC / NIKE Grand prix.

BMC MAILING LIST

To receive news of BMC events and full BMC results as they happen throughout the summer, BMC members on E-Mail can join the BMC Mailing List. To subscribe to this free of charge service please send an E-Mail to Matthew Fraser Moat at **mfm@fmconsultants.telme.com.**

1997 SUBSCRIPTIONS

Your 1997 subscriptions were due on January 1st 1997. The BMC does not send out individual subscription reminders, so 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.

TOP 100 ATHLETES DESKMAIL

Athletes who featured in the National Top 100 in 1996 will have received Electronic DeskMail from the BMC over the last few months. If you are on this list, please notify Matthew Fraser Moat as well as Pat Fitzgerald of any changes in address etc.

RECOMMENDED SERVICES

i. **Aesthetes**, for a nation-wide network of podiatrists and suppliers of orthotics. For further details please call 01332 202232.

ii. **Peak Performance**, for the best technical athletics technical journal in the world. Write to Peak Performance, 1st Floor, 5 Charterhouse Buildings, Goswell Road, London EC1B 1HH.

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

iv. **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.

v. **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.

FRANK'S 70th BIRTHDAY PARTY

Frank Horwill will be having his 70th Birthday Party on Thursday 19th June. We need a organiser. Volunteers please.

BMC ARCHIVES

A volunteer is needed to help compile BMC statistics from 1963 onwards. Suit student in London wanting a summer job. Expenses and subsistence paid - please contact Matthew Fraser Moat.

NEXT ISSUE

The next issue will be published in November 1997. Please send all articles, preferably on disk or by E-Mail, to Dr. Tim Grose, 31 Odette Gardens, Tadley, Hampshire, RG26 3PS (0118 982 0959, groset@logica.com) by 31st August 1997.

BMC 800m BATTERSEA PARK 18th January 1997

Jon Ridgeon and Mark Richardson made their debuts at 800m as Jason Thompson won the first BMC Race of 1997, just ahead of training partner Clive Gilby. For Gilby it was a welcome return to the track having missed most of 1996 through injury.

Rupert Waters took the pace through 400m in 54.7, closely followed by Gilby, Thompson and Bentham. Gilby took over at 550m but was not strong enough to hold off Thompson in the final straight.

Ridgeon and Richardson had wanted to gauge the progress of their winter conditioning and both expressed satisfaction with their results and proudly signed up as new members of the BMC, both having achieved the BMC qualifying time of 1:56.0.

1, J Thompson (Dartford) 1:51.8; 2, C Gilby (BMC) 1:52.1; 3, J Ridgeon (Belgrave) 1:54.7; 4, V Rose (TVH) 1:54.7; 5, M Richardson (WSE) 1:55.9; 6, K Bentham (TVH) 1:56.7; 7, N Levy (Belgrave) 1:59.4; 8, L Murphy (Reading) 2:03.5; 9, C Anderson (Team Solent) 2:06.6.

NEW MEMBERS

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

2851	Cor Datema HOL	
2852	Stephen Worrall	Coach
2853	Paul Kinsella IRE	Coach
2854	Neil Atkinson	Coach
2855	Sarah Butcher U17	
2856	Helen Zenner U17	
2857	Edward Williams	Gold
2858	Mark Glennie U17	
2859	John Mayock	Gold
2860	Karlene Tromans U17	
2861	Chris Moss U20	Gold
2862	Joe Daniels	
2863	George Skafidas	
2864	Robert Dean U17	
2865	Steve Turvill	
2866	Rosanna Iannone U20	
2867	Susan Miles U17	
2868	Emma Grant U17	
2869	Julia Bleasdale U17	
2870	Roger Williams	Coach
2871	Liz Talbot	Gold
2872	Bud Baldaro	Coach
2873	Ron Allison	Coach
2874	Keith Dearing	Associate
2875	Jon Ridgeon	
2876	Mark Richardson	
2877	Carly Scott U20	
2878	Martin Broderick	
2879	Nicola Andrews	Gold
2880	Gareth Strange U17	
2881	James Guest	Gold
2882	Vicki McPherson	Gold
2883	Amanda Child U17	
2884	Daryn Castle U20	
2885	Dafydd Solomon U20	
2886	Stephen Whitelaw U20	
2887	Jennifer Meadows U17	
2888	Brian MacKenzie	Coach
2889	Richard Ward U17	
2890	Caroline Buckner	
2891	Beatrice Roh GER	Gold
2892	Tseguy Berhe U17	

Results of the BMC Female Athletes Questionnaire - Winter 1996-97

Val Brandon was asked by the BMC to find ways to improve the standard of the BMC women's races in all age groups so it was felt the best starting point was to ask you for your

Women's Questionnaire

by Val Brandon

input. We are very appreciative of the 40 athletes who replied to the survey. Thank you!

To improve your race times you have to race well, often and aggressively. This means you have to make the effort to get to the races where the best competition will be. 85% of you said you ran best with good competition and half were prepared to travel a long way or stay overnight for BMC races. This means you all need to be at the BMC National Grand Prix Races! These will be the best races outside national and regional competition that you will find this summer. You have to train hard enough to achieve your goals and potential. Both racing and training have to be well planned to provide a good progression from your current fitness and training level to your ultimate goal.

The survey focused mainly on your racing strategies, performance and travelling to and from competitions. The question that I added at the last minute was about your preferred racing day and proved to be most informative. As you can see from the results mid-week racing definitely gets the thumbs down. The main reasons were difficulty with travelling, work, college and family commitments. Not racing midweek is no excuse for those who said it interfered with their training. The training should be planned to suit the races. There is a definite conflict between your preferences and the planned fixtures. This is because the fixtures calendar is so congested it has not been possible to put on any major BMC races at weekends except for the Grand Prix Final. So mid -week races it has to be this summer! Book your four half days holiday now for the National Grand Prix.

Travelling is the other obviously problematic area. Many of you do not like to or do not travel alone to races and are therefore dependent on lifts to races. Clubbing together with some of the girls who live reasonably near and meeting at mutually convenient point is better than going all the way on your own. If your goal is to be an international athlete you have to be tough. Getting yourself to races on your own, racing hard when you get there and then getting back home will make you tough.

Only a quarter of you felt that you raced best in paced and mixed races, most of you thought good competition was important and two thirds rated self-motivation which compared quite closely with those would were prepared to run from the front. But this did not compare with the half of you who wanted a fast time in every race and with only the third of you who were prepared to take it out hard and find out how far you can get. This figure was quite close to those of you who had run within 2 seconds of your PB more than twice. These two factors along with the 58% who wait to see what happens in a race show in different ways that you are not racing well enough.

Firstly, you must be running close to your PB on a regular basis to give yourself the opportunity to improve. To achieve this you have to go out and run hard and be prepared to hit the wall. The wall will get further away each time you race. It is important not to be afraid of racing like this. Wilson Kipketer would not have broken the World Indoor Record at the World Indoor Championships recently if he had been afraid to go for it. No world record or PB is achieved by holding back.

Secondly, you also have to be totally focused in what you are doing. If you are planning to wait and see what happens then you will not be focused on your race and will not have a well enough defined race plan. With this approach, I suspect someone else will take the initiative tactically. You will still be wondering when to go for it, by which time the race has been won by a rival and you will not have even run the fast time you had hoped for.

To have a good focus, you need to decide what you want to achieve out of this particular race. Weigh up the opposition. Can you win? If not, then are you looking for a position against a particular rival or do you want to get towed around for a good time? If you can win, will it be a close race? How will you run to outwit your opponents? Do you know their strengths and weaknesses? Are you intimidated by anyone? If so, you may be letting her win before you toe the line. Do you know the pace you want to run at? Have you decided where you are going to position yourself? Do you get excessively nervous before a race? Do you then use any relaxation techniques to lower your tension to an acceptable level?

Thirdly, the most crucial thing in a middle distance race is to have total concentration and total awareness of what is happening around you. If you have one split second lapse then the race will be lost.

Finally, you need to race more often. The average of just under two 400m races, just over six 800m races, three 1500m races and less than one 3000m race per head is not enough for consistency and to gain improvement. This is especially so if you have run more than one race in the same day. As only just over half of you have races plans this is now the time to sit down with your coach and look at the most major event you want to enter. Then work out how the other races are going to fit in with your main objective. These will include league races for your club, regional BMC and National Grand Prix races.

As you need to race over distances from 400m to 3000m, work out which lower key meetings will have the right level of competition for your lesser events and find the better races for your main event. If you find yourself racing with poor competition the only way to make it worthwhile is to push yourself to the limit. Get together with some other girls to make sure there will be enough of you to make a race in your regional races. Do not wait to be asked by the regional secretaries if you want to race. Call them, they may help you contact other athletes. All the dates for the BMC meetings are in this issue. The main fixtures calendar was published in *Athletics Weekly* in the March 26th edition. Your local open meetings will be on fairly predictable dates.

To sum up, now is the time to set your goals for the season. Decide on all your races for the season. Check entry standards and dates. Then your training can be planned so you can achieve your objectives. Arrange for time off work now. Sort out your travel arrangements. Use the BMC regional secretaries and committee members to help you contact other athletes. If you have access to the Internet and E-Mail then it easy to contact other BMC members. Be pro-active, use your initiative, train hard, race hard and good luck for the season!

Questionnaire Results

Number of Athletes who replied: 40 (U17: 23%, U20: 15%, U23: 23%, Senior: 40%)
Average no of races run: 400m: 1.9, 800m: 6.3, 1500m: 3.7, 3000m: 0.6
Have you run within 2 secs of your PB more than twice? 38%
Do you plan your races? 65%
Will you include a BMC race? 60%
What day you prefer to race? Tue: 13%, Wed: 20%, Sat: 68%, Sun: 53%
Are you deterred by travelling? 40%
Are you deterred by travelling alone? 53%
Do you take yourself to races? 55%
Do you travel alone? 45%
Is travelling back late at night a problem? 40%
Are you dependent on getting a lift to races? 58%

Women's Questionnaire

by Val Brandon

Will you travel to a race requiring an overnight stay? 95%

What calibre of race would that be? Open: 5%, BMC: 50%, League: 23%, County: 8%, Regional: 53%, National: 88%, International: 80%

Would financial assistance encourage you to travel further? 73%

What is the longest time you are prepared to spend travelling? 1hr: 3%, 2hrs: 13%, 3hrs: 40%, 4hrs: 20%, 5hrs: 40%

What makes you race best? Money: 5%, Mixed races: 25%, Paced races: 28%, Self-motivation: 65%, Good competition: 85%, Same age group: 13%

What type of race do you run best in? Open: 13%, League: 20%, BMC: 43%, Mixed Races: 30%, Championships: 70%

In a race do you (tick any number)? Run from the front: 60%, Let someone take the pace and kick at the end: 68%, Take it out hard and see how far you can get: 33%, Wait and see what happens in the race: 58%, Have a race plan: 55%, Please state any other: 5%

What do you consider important when racing (tick any number)? Getting a fast time every time you race: 50%, Winning the race even if the time is slow: 38%, Winning with the fastest possible time in an easy race: 23%, Trying different tactics: 68%, Nothing in particular: 0%, Please state any other?: 15%

Where would you position yourself in a tactical race? 1st: 20%, 2nd: 50%, 3rd: 43%, at the back: 0%, other: 5%

Would you like to attend a women's only training day catering for your needs? 88%

Athletes who replied to questionnaire: Joanna Anthony, Kirsty Baird, Tanya Baker, Helen Bebbington, Sarah Bouchard, Sarah Bull, Kelly Burwood, Gabrielle Collinson, Emma Deakin, Catherine Dugdale, Nicola Everett, Michelle Faherty, Sheila Fairweather, Charlotte Fearn, Sarah Fensome, Lynn Gibson, Francesca Green, Laura Hale, Jenny Harnett, Emily Hathaway, Jenny Hawthorne-Brown, Jilly Ingham, Sarah Jackson, Anita Jenkins, Sharon King, Dorothea Lee, Rachel Ogden, Ellen O'Hare, Zoe Peatfield, Claire Raven, Caroline Slimin, Victoria Sterne, Claire Stockley, Julie Swann, Ann Taswell, Penny Thackery, Ceri Thomas, Karlene Tromans, Camilla Waite, Michelle Wannell.

BMC Questionnaire

Over 150 members responded to the questionnaire sent out with the last issue of the BMC News. Members were asked to answer questions giving marks out of 10 - the results expressed as percentages are:

Do you consider that the BMC has been effective in 1996? 82.2%

Do you consider you membership to have been worthwhile? 85.3%

Do you generally agree with the aims expressed in our Vision 2000? 86.0%

The Committee are gratified by this high level of satisfaction amongst our members, but take note of many of the comments in response to the final question "How would you improve the BMC". Some of the comments were:

- The BMC is top line already - your magazine is superb (849 Ray Williams).
- You will need professional administrators to implement vision 2000 (1278 Mike Rezin).
- The BMC is too male orientated (2023 Lynn Gibson).
- Include 4x400m relay races at the end of larger BMC meetings (2251 John Gercs).
- Increase distribution of races e.g. Leeds / Sheffield (2303 David Rowbotham).
- More frequent regional training days, i.e. every other month (2304 Aidan Walpole).
- Proposals in Vision 2000 need to be carried through (2341 Simone Hilton Wilson).
- More active regional secretaries (2356 Margaret O Hogartaigh).
- More Glen Grant's not "bullshitters" (2376 Roger Clark).
- Send invitations out to the big meetings (2379 Alasdair Donaldson).
- BMC finals should be in heats and finals format not graded races (2384 Martin Airey).
- More issues of BMC News (2408 Ramsay Sloss).
- More specific races for U17/U20 throughout the country (2448 Gareth Price).
- Members should have priority in getting in to 'A' races (2493 Ian Mitchell).
- Introduce T-shirts and sweatshirts (2520 Graham Scott).
- More Midlands races (2563 Nicholas Mapp).
- More weekend events (2589 Sarah Bull).
- More training weekends up north (2595 Will Barry).
- More races in Scotland (2603 Stuart Campbell).
- More 5,000m events (2622 Andres Jones).
- More information in North East (2648 Ken Harker).
- It is frustrating when non-members take places in the fast races - why pay your subs? (2682 Andrew Prophett).
- Increase information available to members (2684 Rob Whalley).
- Vision 2000 is the only way forward (2715 Tony Johnston).
- More races in north-east (2723 Paul Dickie).
- More sample training sessions in BMC News (2725 John Lyster).
- Tighter administration (2732 Dave Reader).
- Don't change (2739 Rod Finch).
- Promote 5,000m running better (2722 Matthew O'Dowd).
- More newsletters to keep members informed (2752 Mark Best).
- More gold standard races in Midlands (2765 Gregg Taylor).
- Send BMC News to members when they join (2786 Charlotte Fearn).
- Pace 'B' and 'C' races, not just 'A' races (2788 Grant Cuddy).
- Equal prizes for women (2805 Lucy Field).

Isabella Baumann Interview

by Dr. Norman Poole

The German Dieter Baumann, is the current European 5k champion and one of the few Europeans who seems able to compete with the Africans. He is coached by his wife, Isabella, a qualified exercise physiologist. In this article she discusses her training philosophies with Normal Poole, the national event coach for middle distance.

Background

From 1992 to 1996 times have changed dramatically and nowadays it is commonplace to run sub 13 minutes for 5k and yet nobody has been able to break Dave Moorcroft's European record. We are trailing behind and this is mainly why I started to reconsider my own approach. Right now we are in a process of trying to adapt to long distance running today. When I tried to pinpoint what my training philosophy is I came up with the following points.

- Every athlete has to be treated as an individual and even when we met as a group we never really train together because everyone is usually at different levels.
- We always had reserves. The GDR used very high mileage from the early years but we tried to keep the mileage down and now after 12 years of Dieter's international running we've finally decided its now or never. It used to be 70 or 80 miles and maybe now we're running close to 90.
- What I like to do every year is to find a new stimulus in the training programme, something the athlete has to work with and get used to in the first period of training and then we reflect on it. Mostly it has been what the Africans are doing.
- Keep a close eye on what other internationals are doing. I learn more on the warm-up area than I ever have out of books.
- Athletes need to feedback and contribute to the training plan.
- Flexibility of the training programme. If an athlete hasn't recovered, then I change the programme. I usually set up a month at a time, but I'll change it from week to week. I usually do two hard sessions and two long runs at the most. I do not believe in three hard sessions per week. That is not long enough to recover.
- When it come to planning out the year, I keep in mind three areas to consider and develop because basic strength has nothing to do with maximum strength.

Competition

I believe every competition is important in itself. I don't believe in athletes going in saying "it's just a build-up." No, whatever performance you have either boosts your self confidence or brings it down. For us, it is usually a season with scarce or concentrated running. The average number of races that my athletes do in the build-up to a major championships is seven. There's only one day that counts. You only have to run fast once a year then everything pays for itself. I'm thinking here of Robert Denmark who produces so many good races, but never seems to get it down on the day.

Basic Endurance / Basic Strength

This is something that I regard as something that produces lactic acid readings within 2-4mmol and lasts for a time span of 30-90 minutes.

Mileage Blocks: This is just not a number in itself. I like to have blocks in the season which are four to five weeks long with high mileage. Then we come down, race and then go back up. In the winter period I would like at least three such blocks, one or two in the spring and then another short period of two weeks in the summer. July is a month of training for us. You need a lot of time to re-build mileage if you race for a long period in the winter (say, indoors).

Time: Basic endurance training needs time: time for the actual training session and time for the development. What we see the Africans do right now is an enormous level of aerobic endurance.

Long Runs: These are up to two hours where we don't really worry about the actual speed. We do all of our runs in a hilly environment, so there's a strength component there too.

Basic Strength: We do this in the living room with the athlete's own body weight. It lasts about an hour with no rest.

Specific

Steady state runs: In the past I have not used these because they tend to be very hard competitions against the clock. However, Yobes Ondieki told me that you have got to be able to run, at any time of the week, any time of the year, a fast l0-miler. Once you can do that, it seems to me easy enough to be within the low lactic range, but hard enough to develop endurance level. They are anywhere between 10 and 12 miles.

Long Intervals: The problem is that very many athletes go too hard in intensity and run times to impress their coach. This is the wrong thing to do. High lactic acid readings are way too hard for basic endurance. So this is where you might want to split the group and have everybody do their own work When basic endurance is your goal, you have to ensure the intensity is low. When the Africans return from two to three months of rest, you can't believe they can run at all, let alone run sub 28 minutes for 10k.

High altitude: I've used it a lot and I believe in it. Of course there are examples of people who don't use it. High altitude is used to develop basic endurance and medium altitude is used in the summer when we want to develop speed. The problems that you have is a biochemical one. You damage too many of aerobic enzymes. This is why I use high altitude winter camps even though the weather is bad. All I want is low intensity and a blood boost for basic endurance.

Specific Anaerobic Endurance

This is what I've started doing on a more organised basis since 1994 after I had to accept that 13:10 is worth nothing at the most. Up to 1994, Dieter was completely confident of running a 5k with a split time of 8:00 for 3k. Now you cannot go to an international race if you're not ready to run 7:45 or faster. This really needed a change of mental set-up and a change of training to prepare the athletes to do that. You also need to change speed during the race and athletes have to learn to do that by tolerating it for 20 minutes in training.

So in the winter I would use long uphill running to prepare medium high lactate readings. It has several advantages: you don't have to run too fast, which in the winter is good so there is a good level of strength involved and with a long downhill recovery, there is a fairly high mileage. These hills might be between 300m and 800m and I try to get the athletes to go to high intensity for the last half, which is at least the last 20 to 25 minutes (8-9mmol).

At the end of the winter we do speed changes within steady state running, e.g. we run 10 miles and include 1000m to 1 mile bursts where they accelerate to what they think they can tolerate at their 5:20 mile speed (2-3mmol). The body has to try to eliminate lactic acid and tolerate speed while recovering as much as possible. The steady state run should not be too fast as you will never

Isabella Baumann Interview

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recover from the first acceleration.

Pre-Competition

Get the lactic acid high and keep the recovery low. e.g. 4-5 x (1000m, 400m) in 2:47-2:50 (spring, 4mmol) 2:42-2:45 (summer); and the 400s in 55-56 seconds.

Another example (Franke) 3x3000m (8:45, winter, 8:40, summer). After 1200 he runs a fast 800m in 2:06 and then comes back to 2:55 pace - great 10K session for unrhythmical race.

What I try to do over the year

I try to cover these levels of intensity: Winter - basic endurance work with very rare hard sessions. In April - three to four harder high lactic acid range sessions, but not too much. Within a year there may be five or six periods. It is to boost the athlete's confidence.

The example weeks are not week after week! It's only since 1996 that Dieter has managed to do one single 100-mile week. It takes a long period of time to develop your aerobic enzymes.

Supplements

- On every level an athlete should SLEEP. You cannot beat sleep.
- Water - swimming, thermal baths etc.
- Carbo boosting after a long run with carbo drinks using 5g per kilo of body weight. That's 1600-2000 calories. This has to be done within the first hour of a long run.
- Antioxidants: vitamins E, A, and C and Zinc oxide. This is good in an athlete's high training period. It is one way of supporting your own system.

Example of Training Weeks

	Winter	**Spring Altitude**	**Pre-Comp**	**Competition**
Mon	15 km 8 km strength	15 km 8 km strength	12 km 8 km strength	4 x 1000m 4 x 300m 6 km
Tue	fast distance 17 km 8 km easy	1-2-3-2-1 km 8 km easy swimming	(1000 , 400) x 5 6 km easy	10 km 6 km
Wed	Long run 25 km Strength	Long run 20 km Strength	Long run 18-20 km	15 km
Thu	12 km 8 km	15 km 8 km	12 km 8 km	8 km 6 km
Fri	15 km strength aqua jog	Hills 12 x 250m 6 km easy	14 x 500m every 3 fast 6 km easy	Warm-up 3000m
Sat	Fartlek hilly 22 km 6 km	Steady state 15 km 8 km easy	12 km 8 km	6 km 6 km
Sun	Long run 25 km	Long run 25 km	Long run 22 Km	Warm-up 5000m
Mileage	161 km	155 km	145 km	100 km

Training for 400/800m

by Steve Bennett

Training for 400/800m: The Discussion of an Alternative Plan

Steve (33) lives in the Blue Mountains, 45 miles west of Sydney, Australia, and has been involved in Athletics since aged 10 and has competed in all running events from 100m to the Marathon. He coaches a small squad of Australian national medallists including Todd MacDonald and his particular interest is converting fast 400m athletes into elite 800m athletes. Steve is a Secondary School Science Teacher as well being the webmaster of the Sydney 2000 Track & Field Training Site: http://www.pnc.com.au/~stevebn/

Traditional Plan

The problem is to develop the 400/800m athlete's speed and strength to maximal levels while at the same time developing the endurance qualities required to run two laps fast. Traditionally many 800m athletes follow a single periodised year in a fashion that involves focusing on different energy systems at different stages of the year as described below.

Transition: 4 weeks

- Light training to recuperate, includes both fast strides and aerobic running.

A mental break more than anything but any injuries are worked on early in the year.

Early background: 12 weeks with every 4th week lighter

- Building up of volume of aerobic running runs of 6km to 16km at varied speeds with some long hard runs.
- Typically buildup to around 60-100km a week with maybe some days with 2 sessions of aerobic running.
- Aerobic power speedwork e.g. 6 x 800m at 5km pace, rest 1min
- Anaerobic threshold running (some cross country races).
- Occasional speed drills and sprinting up to 60m.
- Buildup of gym training weights and circuit work.
- Technical improvement of posture and relaxation.

There is no real focus on anaerobic tolerance but rather on aerobic development and strength while maintaining the range of movement needed for sprinting only. Maximum speed cannot be improved during this time because the volume of slow running would leave the athlete too tired to be able to practise running at faster rates than ever before. Also the ground contact times during aerobic running are contrary to the ideal training needed for sprinting. The volume of slow running would drop sprinting speed below real maximum for this reason alone.

Pre season preparation: 12 weeks

- Maximum volume reached in the middle of the phase.
- When total volume decreases strength work is increased in volume and intensity and maximum strength is reached late in this phase or early in the next. This may involve gym work and hill running, e.g. 16 x 100m reps up a 17% hill rests 90sec.
- More anaerobic work is introduced and allowed to increase intensity through the phase. Peak cross country racing season or hard longer runs.

Usually anaerobic performances during 400-800 pace reps are well below race season standards because of the long period of absence of this type of training.

No volume of pure speedwork at 200-400 speed can be done without undue soreness and injury. This is because of unfamiliarity with the training and because of the volume of other training that has been done at well below race speed.

Early season 12 weeks

- Introducation of regular racing.
- Further decreases in volume and an increase in speed and anaerobic intensity.

This is the time of peak injury risk, while the body is re-adapting to race speeds. The typical difficulty is doing the required amount at 200 speed for the 400m performance while at the same time maintaining aerobic power. Aerobic volume when decreased allows better quality. anaerobic training to be performed. The peak of the season is still 10 weeks into the next phase.

You could suggest that anaerobic speedwork is being started too early if aerobic ability drops but it seems to take 3 months of regular hard anaerobic work to develop thespeed that was lost during the early part of the training year.

Early peak season 8 weeks

- Decreases in volume - no long runs, maintenance of aerobic ability by some shorter solid pace runs.
- Focus is on race specific endurance and developing 400m type speed.
- Most speedwork is longer reps with longer rests e.g. 2 x 1000m, 15min rest or 3 x 800, 15min rest or 3 x 400, 20min rest
- Also some shorter reps with short rests 3 x 3 x 200, 30sec rest.

The athlete would normally lead into serious races with a solid session 4 days previous then two days beforehand a tempo session with the focus on relaxation at race pace with good rests. This would be well within themselves. The other days would be either easy strides and a small volume of relaxed 100s or a 4km solid run (warmup and warmdown not included).

Athletes may be striving to reach last season's peak performances at this late stage. Doubts may creep in which could then effect training and racing performance or confidence in the coach.

Peak 6 weeks

- Total focus on racing.
- Usually anaerobic performances are at the very highest levels, demonstrated by the very best 400m performances of the season.
- Good 800m race performances follow the dropping of the 400m time.

However, aerobic power is probably already dropping and is below the ideal level due to the fact that it had to be left behind as a focus long ago (after all that work!)

Further comments on this plan

All aspects of training follow from each other, an injury at any stage may lead to doubts of being able to "peak" this year. Athletes get bored mid year when they are so far from anaerobic territory and may be demotivated early in the race season when race times especially in the 400m are so slow.

How will the athlete ever develop the highly desirable abilities of strength and pure speed to be able to race close to their potential in the 400m? Adaptation of the abilities required for good 400m running only really occur for the last 6 months of the year when they fit in around tiring endurance training.

The 400/800m athletes are probably better off not really racing cross country as the risks involved in downhill running combined with the extra recovery required with longer races would make it even more difficult to develop the speed required.

An Alternative Plan would:

- involve improvement of all aspects together at the same time in a linear fashion.
- not sacrifice some energy systems within a phase to develop another.
- still aim for the athlete to peak at a certain time each year as any other method.
- make it easier to peak twice a year although doing this too often would be counterproductive.
- enable the athlete to be fresh enough to work on pure speed and strength to maximize the 400m ability on a regular basis.
- provide a higher level of anaerobic speed all

Training for 400/800m

by Steve Bennett

year which means aerobic development could go on all year instead of having to be lowered in emphasis at some stage to regain lost 400m speed.
- involve developing all aspects of adaptation required for 800m racing in a 4 week cycle.

The Alternative Plan

Summary

This plan involves a four weeks cycle:

- **Week 1: Speed Focus** - The aim is to develop speed at the freshest stage of the cycle.
- **Week 2: Strength Focus** - The aim is to develop strength in the gym and specific strength while running hills etc. There is some overlap with a speed focus early in the week.
- **Week 3: Endurance Focus**- The aim is to develop all aspects of endurance including aerobic power, anaerobic power and lactate tolerance. Some work is done right down to 200m finishing speed all year.
- **Week 4: Recovery** - Easy week to promote recovery. Mostly less volume and less 'long contact' running.

This cycle can be followed all year with adjustments to intensity and volume made to suit the athlete and approaching competitions. They should never be more than 4-8 weeks away from peak shape.

Some coaches have suggested to me that they have seen the frequency of injuries drop due to the lack of 'speed shock' at any stage. The cycle could also be shortened to 3 weeks when in race preparation.

In the early cycles focus can be more on new techniques, running style improvement and performance of all sessions in a relaxed way in volumes that can be handled. The total loading either intensity and/or volume would aim to be increased each cycle.

All systems should either be maintained or developed in each cycle. If anything goes backwards significantly something needs to be changed. (Of course, maximum 400m speed cannot be maintained all year but the qualties that contribute to it should be able to improve - e.g. a 47.0 runner should not be any slower than 48.0 all year.

The later cycles involve performing the new habits that have been learned well and focusing on creating maximal adaptation of all energy systems while at the same time maintaining systems that already seem at near maximal levels for the year. The late cycles are tougher and in the case of race preparation would involve less volume and more intensity.

The content needs to be tailored to the individual athlete. They can all absorb unique amounts of the different types of training. They all lose the qualities given to them by the different energy systems at a unique rate. They all respond to the different types of training in a unique way.

Athletes in early stages of their involvement in athletics should focus more on developing the ability to handle a reasonable training load at a lower intensity. They should certainly develop the ability to complete easy aerobic runs of 40-60min comfortably before following a higher intensity program.

Example Plan for Todd MacDonald 47.30/1:48.01

Recall that the plan needs to be designed to suit the unique athlete.

Week 1: Speed

Mon	Gym: focus on power and postural improvement.
Tue	Track: plyometrics, speed drills, maximum speed development.
Wed	Gym: focus on power and postural improvement. Running technique improvement and relaxation practise, e.g. warmup, 10 x 80m, warmdown.
Thu	Track: speed drills - relaxed 200m pace, e.g. warmup, 3 x 2 x flying 100s at about 200m finishing speed, 3/7min rests .
Fri	Gym: focus on power and postural improvement.
Sat	Track: plyometrics, speed drills, maximum speed development.
Sun	10km at a moderate pace: 3:45-4:00/km

Week 2: Strength

Mon	Gym: strength focus
Tue	Track: warmup, plyometrics, speed drills, relaxed 100s at 400m pace, e.g. 3 x 5 x flying 100m at 400 pace, 3/7min rests or 2 x 5 x 200 at 400 pace, 5/10min rests
Wed	Running technique improvement and relaxation practise as Wed week 1.
Thu	Short hills: 3 x 5 x flying 100m up 17% slope, 2min rests, warmdown.
Fri	Gym: strength focus.
Sat	Long hills: warmup, 4 x 800m up 5% slope rest at equivalent to 3000m effort, 8min rest, warmdown 4km.
Sun	Anaerobic threshold run: 10km, middle 8k at a solid pace (3:30/km) on a rolling hills trail.

Week 3 Endurance

Mon	AM: Circuit training (fullbody fitness). PM: Aerobic run 8km at 3:45/km
Tue	Track: warmup, relaxation technique strides, short reps/short rests, e.g. 18 x 200 in 29, 1min rests, then rest 1min and a 400m in 54, warmdown
Wed	AM: Circuit training (fullbody fitness). PM: Aerobic run 8km at 4:00/km.
Thur	Track: warmup, relaxation technique strides, long reps/long rests, e.g. 3 x 1000m in 2:35, 10min rest or 2 x 1500m in 4:10, 10min rest, warmdown
Fri	8km at 3:45/km
Sat	Track: warmup, relaxation technique strides, fast medium reps/medium rests, eg. 5 x 400m in 53 rests, 8min rest or 3 x 600 in 80, 8min rest or 3 x 3 x 300 at 800 pace, 4/15min rests, warmdown
Sun	Long run: 14km Fartlek at 4:00/km

Week 4 Recovery

Mon	AM: Swim 20min aerobic. PM: 6km easy.
Tue	Track: warmup, technique relaxation strides, tempo runs at 800 pace, eg 6-10 x 200 at 800 pace, 5min rest - an easy session, wamdown
Wed	AM: Swim 20min aerobic. PM: running technique improvement and relaxation practise as Wed Week 1.
Thu	Track: warmup, technique relaxation strides, tempo runs at 400 pace, e.g. 2 x 200m in 23.4, 2 x 3 x flying 100s in 11.5, 5min rests - an easy session, warmdown
Fri	Swim - light
Sat	Time Trial: one of 300m, 500m, 1000m or low key race at an effort that gives good feedback of form not necessarily run all out.
Sun	Rest

Feedback

Feedback on these ideas is invited. I am keen to develop these ideas further and if you are already using a similar program I would be especially keen to know about it.

There are undoubtedly many methods used in the training of elite 800m athletes. A recent trend is for the 800m event to be moving back toward the 400/800m type again. I believe that improved methods of training have been recently 'discovered' to get the most out of these athletes. The 'old' way was not developing these types fully as the 400/800m type does not appear thrive on large volumes of training.

Steve Bennett, 9a Linden Ave, Linden NSW 2778, Australia,, phone/fax 61 47 531000, E-Mail stevebn@pnc.com.au.

1996 UK Merit Rankings

by Peter Matthews

This is the 29th 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 1996. 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. A full listing for all events (12 pages) is available for £2 including postage.

For each event the top 12 are ranked. On the first line is shown the athletes name, then their date of birth followed, in brackets, by the number of years ranked in the top 12 (including 1996) and their ranking last year (1995), and finally, their best mark prior to 1996. 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 **Curtis Robb** 7.6.72 (6y, 1) 1:44.92 '93
1:46.78, 1:47.48, 1:47.61, 1:47.75; 1 Riga, 1 Tallinn, 1 AAA, 3 Helsinki, 6 GhG, 11 CP-GP, 6sf OG

2 **Craig Winrow** 22.12.71 (5y, 3) 1:46.54 '94
1:45.69, 1:45.77, 1:45.85, 1:45.91, 1:46.66, 1:47.03; 1 BL4 (1), 1 Wyth-May, 4 WG, 10 Rome, 5 Nuremberg, 5 AAA, 3 GhG, 8 CP-GP, 8sf OG, 7 McD, 8 Berlin

3 **David Strang** 13.12.68 (4y, 2) 1:45.85 '92
1:45.81, 1:46.36, 1:46.38, 1:46.41, 1:46.56, 1:47.70; 2 Cape Town, 4 ECp, 3 Tallinn, 2 AAA, 4 Helsinki, 5 GhG, 7 CP-GP, 4h OG

4 **Andy Hart** 13.9.69 (2y, 10) 1:48.06 '92
1:46.57, 1:47.44, 1:48.0, 1:48.13, 1:48.55, 1:48.7; 6 Wyth-May, 3 Zofingen, 1 BMC Lough, 3 AAAvLC, 1 Watford 5/6, 4 AAA, 1 Stretford, 4 GhG, 10 CP-GP, 10 McD

5 **Tom Lerwill** 17.5.77 (1y, -) 1:50.49 '95
1:47.27, 1:48.40, 1:49.18, 1:49.2, 1:49.22, 1:49.98; 1 Watford 29/5, 3B GhG, 2 AAA-J, 2 WJ; BL1: 2,-,1,-

6 **Tony Morrell** 3.5.62 (9y, 12=) 1:44.59 '88
1:47.94, 1:48.44, 1:49.04, 1:49.41, 1:49.97, 1:49.?; 2 BL4 (1), 1 North, 3 AAA, 8 Lisbon, 8 GhG

7 **Lee Cadwallader** 17.1.69 (2y, 4) 1:47.53 '93
1:48.37, 1:48.5, 1:49.09, 1:49.1, 1:49.15, 1:49.2; 3 BL1 (1), 2 Wyth-May, 2 BMC Lough, 5 Ljubljana, 6 AAA, 2 Stretford, 7B GhG

8 **Bradley Donkin** 6.12.71 (1y, -) 1:51.93 '95
1:48.25, 1:48.4, 1:48.63, 1:49.18, 1:49.43, 1:50.08; 1 CAU, 2 North, 7 AAA, 6 Cork, 4B GhG, 4 Wyth-Jul, 1 Gh Dev, 9 McD, 1 Nth IC

9 **Terry West** 19.11.68 (2y, -) 1:48.2 '92
1:47.70, 1:47.72, 1:50.31, 1:51.2; 1B BL4 (1), 2 Ljubljana, 4 Tallinn, dnf h AAA, 6 Gh Dev

10 **Rupert Waters** 3.1.72 (1y, -) 1:50.3 '95
1:47.9, 1:48.7, 1:49.00, 1:49.0, 1:49.6, 1:50.27; 2 B.Univs, 2B Wyth-May, 6 AAAvLC, 2 South, 4 Watford, 4h AAA, 6B GhG, 1 Batt.Pk, 1 IR, 2 Wyth-Jul, 2 Gh Dev, 1 Cup, BL1: -,-,1B,2

11 **Robin Hooton** 5.5.73 (1y, -) 1:49.14 '95
1:47.7, 1:49.0, 1:49.99, 1:49.99, 1:50.59, 1:51.29; 3 B.Univs, 7 AAAvLC, 3 Watford, 5sf AAA, 4 Scot, 1 Wyth-Jul, 7 Gh Dev, 1B BL3 (3)

12 **Grant Graham** 27.12.72 (1y, -) 1:49.55 '95
1:49.2, 1:49.45, 1:49.98, 1:50.04, 1:50.79, 1:51.00; 3 BMC Lough, 3 CAU, 8 AAA, dnf-B GhG

\- **Anthony Whiteman** 13.11.71 (1y, -) 1:48.45 '94:
1:47.8, 1:50.4, 1:52.0; 1:50.62i; BL3: 1,-,1,1

Robb is no.1 for the third time with Winrow and Strang swapping places from 1995. Again there was no one anywhere near world ranking, but at least the 10th best standard at 1:47.9 was a little better than in 1994 and 1995. Thanks notably to BMC races the depth of 1:48-1:49 level runs was good and one hopes that some can jump into international class from there. Hart made good progress and most encouraging was the marvellous World Junior silver by Lerwill, after taking nearly two seconds off his pb in the semi-final. There were five newcomers to the rankings. Whiteman was unbeaten but in his three League races did not meet any ranking contenders.

Men 1,500m / 1 Mile

1 **John Mayock** 26.10.70 (6y, 1) 3:34.05 / 3:51.89M '95
3:33.38, 3:50.32M(3:34.82), 3:33.94, 3:34.55, 3:36.23, 3:36.40, 3:36.82, 3:37.03, 3:54.60M; 1 CAU, 8 Moscow, 1 AAA, 2 Cork, 3 GhG, 3 CP-GP, 11 OG, 8 Zurich, 1 v IS, 6 Brussels, 2 E.Carr, 7 Berlin, 8 Rieti, 9 GPF

2 **Anthony Whiteman** 13.11.71 (2y, -) 3:41.92 '94, 3:59.44M '95
3:34.47, 3:34.92, 3:36.11, 3:36.37, 3:36.68, 3:37.00, 3:37.18, 3:37.19, 3:54.87M; 3 Lille, 3 ECp, 3 Nurnberg, 2 AAA, 5 Paris, 4 Nice, 5CP-GP, 7sf OG, 15 Monaco, 3 v IS, 3 E.Carr, 1 Hendon

3 **Gary Lough** 6.7.70 (4y, 2) 3:34.76/3:55.91M '95
3:37.35, 3:38.13, 3:39.18, 3:40.98, 3:41.33, 3:41.37; 7 Melbourne, 8h AUS Ch, 2 CAU, 11 Nurnberg, 4 AAA, 1 SN4, 2 GhG, 11 Stockholm, 11 GP-CP, 2 Ch'ham, 11 Koln, dnf, Brussels, 13 Berlin

4 **Kevin McKay** 9.2.69 (8y, 3) 3:35.94 '92, 3:53.64M '94
3:37.90, 3:38.02, 3:39.40, 3:41.21, 3:41.38, 3:43.61; 4 Hengelo, 13 St Denis, 6 Seville, 3 AAA, 12 GhG, 1 BL1 (3), 16 CP-GP, 12sf OG

5 **Neil Caddy** 18.3.75 (2y, 8) 3:39.67/3:59.6M '95
3:55.84M (c.3:40.7), 3:39.1, 3:39.58, 3:58.59M, 3:59.3M, 3:41.94; 2 AAA v LC, 6 Rhede, 4h3 AAA, 8 Bath, 4 GhG, 12 CP-GP, 1 U23I, 10 Wyth-Jul, 1 Ch'ham, 1 Cardiff, 1 Swindon, 7 E.Carr, 2 Hendon.

6 **Glen Stewart** 7.12.70 (1y, -) 3:40.17 '94, 4:06.0M '91
3:38.66, 3:41.12, 3:59.56M, 3:42.67, 3:43.03, 3:43.11; 1 BL3 (1), 1 Wyth-May, 1 BMC Lough, 1 Ljubljana, 5 AAA, 2 Helsinki, 8 GhG, 10 E.Carr

7 **Ian Grime** 29.9.70 (1y, -) 3:40.35'94, 4:03.7M '90
3:40.1, 3:41.2, 3:41.32, 3:43.81, 3:44.37, 3:45.49; 1 B.Univs, 1 AAA v LC, 6 AAA, 4 Arhus, 9 GhG, 1 IR, 2 Swindon, 3 Cup, BL2: -,-,2,1

8 **Rob Denmark** 23.11.68 (6y, 9) 3:37.99 '95, 3:55.38M '90
3:55.39M (c.3:40.9); 6 E.Carr

9 **Curtis Robb** 7.6.72 (2y, -) 3:38.56 '93
3:38.95, 3:50.57; 1 BL1 (1), 2 Ljubljana

10 **Brian Treacy** 29.7.71 (3y, 5) 3:38.93 '94, 4:00.67M '90
3:40.47, 3:41.78, 3:42.72, 3:43.93, 3:46.46; 8 Granada, 8 Seville, 4h AAA, 7 La Laguna, 2 Andujar

11 **Philip Healy** 1.10.70 (1y, -) 3:43.8/4:02.01M '93
3:40.95, 3:40.96, 3:41.17, 3:43.10, 4:01.2M, 3:45.4; 4 Irish Ch, 5 Santa Monica, 11 Cork, 1 Antrim, 1 So'ton, 2 Hexham

12 **Jon Wild** 30.8.73 (1y, -) 3:41.40/3:59.79M '95
3:41.48, 3:42.00, 3:42.54, 3:42.63, 3:44.41, 3:47.26; 10 NCAA

\- **Steve Green** 18.2.71 (1y, 11) 3:39.19/3:59.6iM '94, 4:06.5M '90
3:42.01, 3:43.76, 3:45.11, 3:46.3, 3:50.66; 2 BL1 (1), 3 Wyth-May, 7 AAA, 15 Cork

\- **Richard Ashe** 5.10.74 (0y, -) 3:42.9 '95
3:41.2, 3:59.98M, 3:42.5, 4:00.30M, 3:43.54, 3:46.35; 5 Wyth-May, 10 AAA, 1

1996 UK Merit Rankings

by Peter Matthews

Watford, 2 U23I, 1 Wyth-Jul, 11 E.Carr, 3 Hendon

- **Robert Hough** 3.6.72 (0y, -) 3:46.0 '92, 4:01.4M '95
  3:41.3, 3:41.5, 4:00.42M, 3:47.5; 1B Wyth-Jul, 4 Hendon, BL4: 1,1,-,1B
- **Ian Gillespie** 18.5.70 (1y, -)
  3:40.72/3:58.64M '93
  3:41.1, 3:42.4, 3:42.7, 4:01.1M, 3:43.8, 4:03.3M; 3:44.48i; 3 Bath, 2 Stretford 16/7, 3 Cheltenham, 5 Wyth-Jul, 2 Cardiff, 4 Swindon, BL1: 1,-,4,3

M = 1 mile time. Equivalents:
3:35.0m = 3:52.0M, 3:38.0m = 3:55.3M,
3:41.0m = 3:58.6M, 3:44.0m = 4:01.8M
Times in brackets are 1,500m times en route to 1 mile.

Mayock retained his no.1 ranking and won the Emsley Carr Mile for the second time. Whiteman, whose only previous ranking was 9th in 1994, started with European indoor silver, and made impressive progress. Lough, who started slowly, just shades McKay, who beat him conclusively at the AAAs, for 3rd. Caddy moved up and is followed by the best of four newcomers, Stewart and Grime, but after them ranking gets tricky. Denmark had just one race, but that fast as he beat good runners in the Emsley Carr mile and Robb had just one fast time, but none of the others had much depth of performance. Treacy and Healy have now declared now Ireland, but I kept them in as British for this year.

Men 3,000m

(Not ranked this year)

John Nuttall 11.1.67 7:48.59 '95
7:36.40, 7:44.66, 7:48.44, 7:49.57, 8:05.14; 6 Hengelo, 7 Nice, 6 CP-GP, 2 Koln, 3 v IS
Rob Denmark 23.11.68 7:39.55 '93, 8:26.05M '92
7:45.45, 8:13.88; 12 CP-GP, 12 Brussels
Robert Whalley 11.2.68 8:09.72i '94
7:52.6, 8:00.13, 8:04.0; 1 Watford, 1 P-CP, 1 Stretford 16/7
Robert Hough 3.6.72 8:10.2i '93
7:52.9; 2 Stretford 16/7
Ian Gillespie 18.5.70 8:00.9 '95
7:53.49, 8:05.79; 7:57.87i, 8:00.65i, 8:02.60i, 8:06.71i; 8 CP-GP, 3 P-CP
Keith Cullen 3.6.72 7:58.25 '95
7:53.97; 9 CP-GP
Gary Lough 6.7.70 7:49.45 '95
7:54.12, 8:11.44; 3 Hobart, 8 ECp
Jon Wild 30.8.73 7:55.16 '95
8:07.4; 7:53.10i, 8:02.14i, 8:07.26i

Men 5,000m

1 **John Nuttall** 11.1.67 (8y, 2) 13:16.70 '95
13:17.48, 13:48.35, 13:52.16, 14:08.39; 5 St Denis, 1 AAA, 9sf OG
2 **Jon Brown** 27.2.71 (6y, 4) 13:19.78 '93
13:20.11, 13:22.11, c13:57+
8 Nurnberg, 12 Stockholm
3 **Rob Denmark** 23.11.68 (6y, 1) 13:10.24 '92
13:31.36, 13:41.87, 13:51.72;
15 Nurnberg, 2 AAA, 13 Berlin
4 **Keith Cullen** 13.6.72 (1y, -) 13:54.52 '91
13:27.00, 14:00.61; 4 Kerkrade, 4 ECp
5 **Paul Evans** 13.4.61 (6y, 5) 13:25.38 '95
13:47.40, 13:49.31, 13:53.23, c13:50+ (OG), 14:16.24; 7 Nurnberg, 1 GhG, 1 BL1 (4), 1 Cup
6 **Ian Gillespie** 18.5.70 (1y, -)
13:40.68, 13:56.6, 13:56.67, 14:00.06, 14:06.57; 1 Street, 19 St Denis, 6 AAA, 5 GhG, 14 Linz
7 **Chris Sweeney** 3.3.66 (1y, -) 13:57.80 '90
13:43.49, 14:05.81; 7 Cork, 6 GhG
8 **Kris Bowditch** 14.1.75 (1y, -) 14:07.86 '95
13:55.32, 14:06.55, 14:10.92, 14:11.77, 14:22.1; 4 AAA, 8 GhG
9 **Spencer Barden** 31.3.73 (1y, -) 13:57.63 '95
13:52.34, 13:56.20, 14:09.8, 14:09.97, 14:12.94; 1 AAA v LC, 5 AAA, 9 GhG, 10 Linz, BL3: 1,-,-,1
10 **Darius Burrows** 8.8.75 (1y, -) 14:11.27 '94
13:54.42, 13:55.81, 14:14.43, 14:17.78, 14:22.85; 3 Zofingen, 3 AAA, 15 GhG, 2 Cup
11 **Spencer Newport** 5.10.66 (1y, -) 13:56.82 '92
13:49.74, 14:06.79, 14:12.01, 14:22.7; 2 AAA v LC, 2 CAU, 8 Cork
12 **Ian Hudspith** 23.9.70 (1y, -) 14:15.43 '95
13:54.6, 14:00.3, 14:00.98; 14:19.40; 7 AAA,14 GhG, 1 BL4 (1)
- **Jon Wild** 30.8.73 (0y, -) 0
13:45.1, 14:10.67, 14:31.70;
16 Walnut, 12 AAA, 19 Hechtel

After five years at the top Denmark is displaced by Nuttall, runner-up in 1994 and 1995. With an amazing turnover, none of those in 5th to 12th places have been ranked before at 5000m. British distance running standards in depth continue to decline drastically, Last year I said that the 10th best of 13:49.15 was the worst since 1970 (record 13:28.44 in 1984). The 1996 10th best was 13:51.99!

Men 10,000m

1 **Jon Brown** 27.2.71 (4y, 3) 28:08.31 '95
27:59.72, 28:19.85, 28:21.40; 2 AAA, 10 OG
2 **Rob Denmark** 23.11.68 (2y, -) 28:03.34 '94
28:20.80; 1 AAA
3 **Paul Evans** 13.4.61 (5y, 1) 27:47.79 '93
28:24.39, 28:28.31; 3 AAA, dnf OG
4 **Ian Robinson** 21.4.69 (2y, 5) 28:34.84 '95
28:04.2, 28:46.06; 2 Walnut, 5 AAA
5 **Chris Sweeney** 3.3.66 (1y, -) 29:15.64 '90
28:44.09; 4 AAA
6 **Dermot Donnelly** 23.9.70 (1y. -) 29:33.8 '95
28:47.90, 29:45.83; 1 CAU, 6 AAA
7 **Andrew Pearson** 14.9.71 (3y, -) 28:40.49 '93
28:32.0, 29:01.05; 17 Walnut, 8 AAA
8 **Martin Jones** 21.4.67 (3y, -) 28:33.18 '94
28:37.87; 4 Koblenz, dnf AAA
9 **Steve Brooks** 8.6.70 (2y, 8) 29:04.63 '95
28:55.38; 7 AAA
10 **Ian Cornford** 1.2.66 (1y, -) 30:07.61 '91
29:08.66; 9 AAA
11 **Mark Hudspith** 19.1.69 (1y, -) 29:02.38 '92
29:09.31, 29:50.80; 2 CAU, 10 AAA
12 **Karl Keska** 7.5.72 (1y, -) 30:27.19 '95
29:10.40, 29:28.84; 1 Westwood, 8 NCAA

Brown takes his first top ranking and both he and Evans made the Olympic final. The 10th best of 29:08.66 is the worst since 1965 (allowing for 6 miles conversions in the 1960s). The only other years above 29 minutes were 1985 and 1995.

Women 800m

1 **Kelly Holmes** 19.4.70 (5y, 1) 1:56.21 '95
1:57.84, 1:58.20, 1:58.49, 1:58.53, 1:58.80, 1:58.81, 1:58.87, 1:59.82; 1 Ljubljana, 2 ECp, 1 AAA, 1 Helsinki, 1 GhG, 4 OG
2 **Diane Modahl** 20.8.65 (12y, -) 1:58.65 '90
1:59.87, 2:00.69, 2:00.80, 2:00.95, 2:00.97, 2:02.03; 4 Bratislava, 9 Hengelo, 6 St Denis, 2 AAA, 1 Zagreb, 3 GhG, 8 Lausanne, 4 Nice, dnf ht OG, 1 BL1 (1)
3 **Sonya Bowyer** 18.9.72 (3y, 2) 2:01.67 '95
2:02.12, 2:02.5, 2:02.85, 2:03.79, 2:04.02, 2:04.1mx; 1 Wyth-May, 2 AAA v LC, 1 WG, 4 Riga, 4 AAA, 4 Lucerne, 2 v IS, 7 McD
4 **Lynn Gibson** 6.7.69 (4y, -) 2:02.34 '92
2:02.83, 2:03.66, 2:04.3mx, 2:04.5, 2:06.5, 2:07.61; 1B AAA v LC, 4 CP-GP, 6 McD
5 **Hayley Parry** 17.2.73 (1y, -) 2:09.07 '95
2:03.77, 2:03.86, 2:03.95, 2:04.15, 2:04.17, 2:04.51; 1 B.Univs, 1 AAA v LC, 3 WG, 6 AAA, 2 Arhus, 1 SN4, 4 GhG, 7 CP-GP
6 **Natalie Tait** 24.8.72 (2y, 4) 2:02.69 '95
2:02.76, 2:05.26, 2:05.76, 2:06.57, 2:06.7mx, 2:06.98; 1 BMC Lough, 2 South, 3 AAA, 4 Helsinki, 6 GhG, 2 Crawley sf
7 **Vicki Lawrence** 9.6.73 (3y, 6) 2:04.42 '95
2:03.52, 2:04.8mx, 2:04.9mx, 2:05.18, 2:05.9, 2:06.02; 2 Stretford, 3 Wyth-May, 1 Basel, 5 AAA, dnf GhG, 3 v IS, 2 North IC
8 **Jeina Mitchell** 21.1.75 (1y, -) 2:05.85 '94
2:04.87, 2:05.12, 2:05.76, 2:06.06, 2:06.73, 2:07.53; 3 B.Univs, 1 South, 1 Tallinn, 7 AAA, 2 Bath, 2 U23I, 1 BL2 (3)
9 **Michelle Faherty** 10.8.68 (2y, 11) 2:05.3 '95
2:04.4mx, 2:05.97, 2:06.9, 2:07.13, 2:07.32, 2:08.4; 2:07.19i; 4 Wyth-May, 3 AAA v LC, 1 North, 1 IR, 2 Wyth-Jul, 8 McD
10 **Sue Parker** 24.3.70 (1y, -) 2:05.50 '93
2:04.9mx, 2:06.5, 2:07.2, 2:07.36, 2:07.72, 2:09.0; 3 Stretford, 5 Wyth-May, 2 North, 3 IR, 1 Wyth-Jul
11 **Angela Davies** 21.10.70 (2y, -) 2:03.67 '94
2:06.92, 2:07.5mx, 2:07.58, 2:07.6, 2:08.0, 2:08.37 2:06.27i; 2 Wyth-May, 5 Basel, 2 IR, 1 Crawley sf, 3 BEL Ch
12 **Vicky Sterne** 12.10.68 (2y, 12) 2:06.1 '95
2:04.63, 2:05.71, 2:07.1mx, 2:07.18, 2:08.35, 2:08.79; 2:06.41i; 11E.Clubs, 2 Ljubljana, 5 Tallinn, 2ht AAA, 6 IR

Holmes was clear at the top with Modahl jumping straight back in after her two-year enforced absence to rank second. Her reinstatement also means that she regained her 2nd ranking for 1994, with those are published in 1995 from 2nd onwards moving down a place. Bowyer was a clear third as Tait, who beat her at the AAAs did not have enough to support that.

1996 UK Merit Rankings

by Peter Matthews

Women 1,500m

1 **Kelly Holmes** 19.4.70 (3y, 1) 4:01.41 '94
4:01.13, 4:04.56, 4:05.88, 4:07.36, 4:07.46, 4:08.14; 7 Atlanta, 1 Rome, 1 AAA, 2 Oslo, 1 IS, 11 OG

2 **Paula Radcliffe** 17.12.73 (3y, 3) 4:06.84 / 4:28.93M '95
4:24.94M (4:08.42), 4:19.48; 4 AAA v LC, 7 Zurich

3 **Susan Parker** 24.3.70 (4y, 8) 4:12.3 '93, 4:37.52M '95
4:11.57, 4:11.96, 4:12.75, 4:13.02, 4:16.21, 4:17.4mx; 2 AAA v LC, 2 Funchal, 2 AAA, 1 Stockholm, 3 Cork, 4 GhG, 4 v IS, 1 BL1 (3)

4 **Alison Wyeth** 26.5.64 (10y, 4) 4:03.17 '93, 4:24.87M '91
4:11.00, 4:16.63; 12 Paris, 5 GhG

5 **Lynn Gibson** 6.7.69 (3y, -) 4:05.75 / 4:31.17M '94
4:12.32, 4:15.23, 4:15.8, 4:16.31, 4:16.4, 4:38.93M; 2 Wyth-May, 2 WG, 6 AAA, 2 Cork, 8 GhG, 1 Wyth-Jul, 3 v IS, 1 Hendon

6 **Michelle Faherty** 10.8.68 (4y, 12) 4:15.37 '95, 4:38.64M '95
4:14.19, 4:15.66, 4:18.38, 4:39.44M, 4:18.90, 4:19.54; 3 WG, 3 North, 3 AAA, 5 Cork, 6 GhG, 2 Hendon

7 **Angela Davies** 21.10.70 (4y, 9) 4:09.29 / 4:31.83M '94
4:13.52, 4:14.66, 4:14.67, 4:17.1, 4:18.91, 4:21.12; 4:16.24i; 1 AAA v LC, 7 ECp, 4 AAA, 4 Cork, 11 GhG, 2 Wyth-Jul

8 **Sonya Bowyer** 18.9.72 (1y, -) 4:22.1mx '95, 4:22.3 '94
4:10.7mx, 4:17.4, 4:39.90M, 4:21.0mx, 4:23.7, 4:27.7; 1 BL1 (2), 3 Wyth-Jul, 3 Hendon

9 **Shirley Griffiths** 23.6.72 (1y, -) 4:20.84i '95, 4:26.7 '93
4:15.68, 4:16.06, 4:19.57, 4:19.86, 4:44.60M, 4:24.58; 1 Hong Kong, 2 North, 5 AAA, 6 Cork, 1 North IC, 1 McD

10 **Lynne McDougall** 18.2.65 (7y, -) 4:05.96 / 4:30.08M '84
4:17.10, 4:18.81, 4:21.85, 4:23.7, 4:27.82, 4:30.05; 1 CAU, 8 AAA, 1 SN4, 1 Scot,

11 **Debbie Gunning** 31.8.65 (6y, 5) 4:12.69 '90, 4:32.32M '91
4:17.4, 4:19.02, 4:19.16, 4:19.62, 4:21.28, 4:22.89; 4:13.40i, 4:17.02i, 4:18.32i; 5 AAA v LC, 3 Flore, 9 AAA, 1 IR, 4 Wyth-Jul

12 **Hayley Parry** 17.2.73 (1y, -) 4:25.51 / 4:48.88M '95
4:16.9, 4:17.9, 4:22.0mx, 4:29.40, 4:36.2; 3 Wyth-May, 1 Welsh, 5 Wyth-Jul, BL3: -,1,1

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, so plucky and unlucky to be injured for the Olympics, ranks first at both 800m and 1500m for the third successive year. Radcliffe ran only two races, but her fast time in Zurich was much better than those following. Parker had her best ever year to take 3rd. McDougall was last ranked in 1990.

Women 3,000m

1 **Paula Radcliffe** 17.12.73 (4y,1) 8:40.40 '93
8:37.07, 8:51.3+, 8:53.0+, 8:56.25;
3 Monaco, 1 v IS

2 **Sarah Bentley** 21.5.67 (3y, 7) 9:10.9mx / 9:12.72 '95
9:04.4, 9:21.0mx, 9:23.4mx; 9:23.27i, 9:38.38i; 4 Cork

3 **Alison Wyeth** 26.5.64 (8y, 3) 8:38.42 '93
9:09.25, 9:19.0mx, 9:25.71; 9:05.45i;
10 Nice, 3 v IS

4 **Sonia McGeorge** 2.11.64 (8y, -) 8:51.33 '90
9:09.53; 9:04.69i, 9:28.04i; 5 ECp

5 **Rhona Makepeace** 7.8.62 (3y, -) 9:03.1 '92
9:11.2mx, 9:15.1, 9:24.5mx, 9:32.97;
7 Cork, 3 AAA

6 **Susan Parker** 24.3.70 (3y, 12) 9:06.2 '92
9:11.68; 1 BL1 (1)

7 **Lucy Elliott** 9.3.66 (1y, -)
9:19.4, 9:21.20, 9:22.0, 9:32.39, 9:39.0;
6 McD, BL1: 4,2,1

8 **Debbie Gunning** 31.8.65 (3y, 11) 9:12.12 '94
9:26.46; 1 AAA

9 **Amanda Parkinson** 21.7.71 (0y, -) 9:17.4mx '94, 9:29.9 '93
9:19.60, 9:36.11, 9:38.1, 9:42.38;
8 Cork, 3 IR, 1 Nth IC

nr **Berhane Dagne (Eth)** 7.10.77 9:22.4 '95
9:21.0, 9:21.6, 9:30.50, 9:38.25, 9:43.1;
1 Sth J, BL1: 3,1,3

No longer a championship event, but still raced at some major meetings.

Women 5,000m

(Previously ranked 1982-90, 1992, 1995)

1 **Paula Radcliffe** 17.12.73 (2y, 1) 14:49.27 '95
14:46.76, 14:51.71, 14:56.36, 14:59.70, 15:09.50, 15:13.11; 1 AAA, 2 CP-GP, 5 OG, 5 Koln, 4 Brussels, 4 GPF, 2 Tokyo

2 **Sonia McGeorge** 2.11.64 (2y, 10) 16:17.32 '95
15:29.04, 15:48.33, 16:01.92; 13 Hengelo, 2 AAA, 13h OG

3 **Alison Wyeth** 26.5.64 (4y, 4) 15:00.37 '95
15:48.91, 16:09.36, 16:18.98, 16:24.74;
19 Hengelo, 3 AAA, 9 CP-GP, 15h OG

4 **Jill Hunter** 14.10.66 (5y, 5) 15:09.98 '92
15:51.55, 15:55.80; 9 Melbourne, 8 AUS Ch

5 **Andrea Whitcombe** 8.6.71 (2y, 9) 16:12.96 '95
16:00.0, 16:03.40, 16:05.36, 16:41.66;
1 AAA v LC, 7 ECp, 4 AAA, 11 Helsinki

6 **Heather Heasman** 27.9.63 (2y, 11) 16:14 '95
15:53.84, 16:00.85, 16:16.9; 4 AAA v LC, 1 North, 8 Hechtel

7 **Lucy Elliott** 9.3.66 (1y, -)
15:56.15, 16:42.35?;
dnf AAA, 8 CP-GP, 2 Cup

8 **Zahara Hyde** 12.1.63 (1y, -) 16:36.0 '94
16:04.12, 16:07.09, 16:43.89; 10 Portland, 5 Seattle, 8 AAA, dnf CP-GP

9 **Vikki McPherson** 1.6.71 (1y, -) 16:19.46 '94
16:06.2mx, 16:11.6mx

10 **Sarah Bentley** 21.5.67 (2y, 7) 15:53.86 '95
16:23.86, 16:25.82, 16:42.35;
5 AAA, 10 CP-GP, 3 Cup

11 **Wendy Ore** 23.5.66 (1y, -) 16:33.50 '93
16:25.79; 6 AAA

12 **Amanda Wright** 14.7.68 (2y, -) 16:04.51 '92
16:29.69; 1 CAU

nr **Berhane Dagne** (Eth) 7.10.77 16:17.5mx '95
16:22,32, 16:0.72, 16:45.2;
1 AAA-J, 1 Stoke sf, 1 Cup

Another splendid season for Radcliffe, who retained her top ranking and beat Zola Budd's British record ranking. After her -a gulf, exacerbated by Wyeth's difficulties in coming back after her severe injury in Gothenburg 1995, although McGeorge did well to make the Olympic team.

Women 10,000m

1 **Louise Watson** 13.12.71 (2y, 4) 33:33.71 '95
33:21.46, 33:28.08, 33:53.0; 10 Koblenz, 1 AAA, 1 Loughborough

2 **Vikki McPherson** 1.6.71 (4y, -) 32:32.42 '93
33:17.74, 33:53.17; 8 Koblenz, 3 AAA

3 **Angela Hulley** 8.2.62 (6y, 6) 32:42.84 '89
33:33.37; 2 AAA

4 **Amanda Wright** 14.7.68 (2y, -) 33:26.79 '92
34:06.25; 12 Koblenz

5 **Angharad Mair** 30.3.61 (1y, -)
34:11.76; 4 AAA

6 **Sharon Dixon** 22.4.68 (1y, -) 35:08.23 '94
34:26.43; 1 B.Univs

7 **Sally Goldsmith** 18.1.61 (1y, -) 35:17.12 '94
34:28.13; 7 ITA Ch

8 **Joanne Thompson** 30.10.58 (2y, -) 33:56.04 '94
34:30.52; 5 AAA

9 **Zara Hyde** 12.1.63 (3y, 8) 33:23.25 '94
34:37.5; 2 Loughborough

10 **Mara Myers** 13.8.73 (1y, -)
34:41.28; 2 B.Univs

11 **Alison Rose** 27.9.67 (3y, -) 33:57.86 '94
34:44.89; 6 AAA

None of our top women distance runners ran a 10,000 metres on the track in 1996. McPherson ran the fastest time - well short of world standards - but Watson won the AAAs to take top ranking.

Kosmin Tests

by Peter Thompson

Tests and measurements are well established ways in which coaches and athletes evaluate the athlete's status, either in preparation for commencing a particular phase of training, to assess the effectiveness of a completed phase of the training programme, to identify talent or as a predictor of performance. There has been a trend in recent years for coach and athlete alike to believe that, to be of any value, such tests require expensive facilities and similarly expensive equipment. This is certainly not always the case, as field testing on the track can be more valid and reliable than laboratory procedures when related to the ultimate test, competition itself. This will always be the case until such time as we conduct competitions in laboratories.

One of the best field tests for middle distance athletes is the Kosmin Test, and requires nothing more complex than a track, a stopwatch, a tape measure and the athletes themselves. I was fortunate to learn of the Kosmin Test in the late 1970's, when Frank Horwill initially introduced the BMC to the first details and tables for the test. Since then, I have utilised this test with athletes I coach on a regular basis and can attest to its accuracy, particularly when predicting the performances of male athletes. Like any good training tool, the test also provides motivation for the athlete, especially when there is no competition, and is individually valid when used on an ongoing basis.

The Kosmin Test was devised in the former Soviet Union to be an event specific test of anaerobic power and endurance. There are, in fact, two separate and distinct Kosmin Tests, one specifically for the 800m and another specifically for the 1500m. The latter can obviously be easily adapted to predict performance in the mile.

In his original publication, Frank Horwill described how the tests were to be administered and Ray Williams, a BMC coach, computed all the distances from Kosmin's formula. The 800m test involves the athlete running for two maximal efforts of 60 secs at a time. There is a 3 mins rest between the efforts of 60 secs and the athlete starts again on the track where the first 60 secs expired. This might, for example, be at 412m. Should the athlete then cover another 394m in 60 secs, the total distance covered is 806m. Referring to the Kosmin Test Tables for 800m athletes, we can predict that the athlete will run 2:01.6. If the athlete had covered a total of 910m we could predict a subsequent performance of 1:49.1.

The Kosmin Test for 1500m athletes requires the athlete to run four 'controlled, maximal' efforts of 60 secs with respective rests diminishing from 3 mins, 2 mins to 1 min. If the athlete covers a total distance, for example, of 1610m, referring to the Kosmin Test Tables for 1500m athletes indicates that the athlete is ready to run 1500m in 3:59.5. Frank Horwill provided the following supporting data from his experience of coaching Tim Hutchings: *"When Tim Hutchings first broke 4 mins for the mile in the Emsley Carr Mile in 1978, he had run 1720m total distance on the Kosmin Test a week before. I was able to say to him " You are ready to break 4 mins." He ran 3:57.8. The test had predicted he could do 3:41.6 for 1500m."*. Frank has over the years used the Kosmin Test with many athletes and found it to be a reliable predictor of subsequent 800m and 1500m performance.

Both the 800m and 1500m tests mimic the anaerobic demands of their respective events in an exhaustive fashion. The 1500m test is particularly challenging and possibly produces greater amounts of lactate and hydrogen ions than many a 1500m race. My experience is that, because it is so psychologically and physiologically demanding, the 1500m test should be reserved for the very experienced athlete, probably older than 18 years of age.

The tables can be used for both male and female athletes but they tend to over-predict for females. Experience has shown that a woman might run, for example, a total of 710m for the two 60 secs efforts of the 800m test, which would predict 2:12.9 from the tables. In actual practice, she will probably be ready to run around 2:15 - 2:16. As the times predicted for 800m become slower and exceed 2:20, the inaccuracies tend to increase to 4 - 5 secs, or greater. It has been suggested that this over prediction from the results of the test is due to the fact that the athletes approach the test in a more committed way than they approach the 800m race itself. If this is the case, there may be a lesson to be learned about the way these athletes race, as the test indicates that they are not reaching their full anaerobic potential.

The real value of the Kosmin Test, though, is not merely as a predictor of performance but as an evaluation tool throughout the training year. Testing for the sake of testing should always be discouraged but there are key times when useful information can be gained and motivation can be heightened. If there is a break at the end of the summer, a Kosmin Test is a useful beginning to winter training in September or October to establish a 'baseline'. Another test may be done in December or January, just prior to or just after Christmas, particularly if indoor racing is planned. A final test may be carried out in March or April, immediately prior to the outdoor season. During the competition phase of the year it is unlikely that a Kosmin Test would be necessary, since there is no better predictor of performance than competition itself. The exception is when there is a lack of appropriate racing opportunities before a major race, when the Kosmin Test may be usefully applied. Ultimately, each coach and athlete will determine what is the best timing for testing within their programme.

The tables for 800m and 1500m are reproduced on the following pages and may be photocopied for use in non-profit coaching and educational settings.

Ray Williams

It is with great regret that the British Milers' Club heard of the death of Ray Williams at the age of 73. Ray was an associate member of the BMC for 25 years and treasurer for seven years. Although not a qualified coach, Ray enhanced the coaching structure due to his outstanding mathematical ability. Given Kosmin's predicted 800/1500m performance formula, he worked out a table predicting 800m times from 2:38 to 1:44.2, and 1500m times from 4:49.7 to 3:35.1 from the distance run in 2 x 60sec and 4 x 60sec respectively. His table is still used by the BMC and is a lasting tribute to his precision. For many years Ray was my coaching assistant at Crystal Palace and became a master at recording every athlete's training performances with accuracy and neatness. Where I was known as the disciplinarian, Ray was a paternal figure often dealing with athletes' personal and competitive worries. We were a great team. In his later years, Ray, a devout Christian, spent his time visiting and comforting the sick. To his wife and family, the British Milers' Club extends its heartfelt condolences. Frank Horwill, BMC founder.

Kosmin Test
for 800m Athletes

2 x 60 secs (maximal effort) [3 mins]

DISTANCE	FORECAST 800m	DISTANCE	FORECAST 800m	DISTANCE	FORECAST 800m
500	2:38.0	655	2:19.5	805	2:01.6
505	37.4	660	18.9	810	01.0
510	36.8	665	18.3	815	00.4
515	36.2	670	17.7	820	1:59.9
520	35.6	675	17.1	825	59.2
525	35.0	680	16.5	830	58.6
530	34.4	685	15.9	835	58.0
535	33.8	690	15.3	840	57.4
540	33.2	695	14.7	845	56.8
545	32.6	700	14.1	850	56.2
550	32.0	705	13.5	855	55.7
555	31.4	710	12.9	860	55.1
560	30.8	715	12.3	865	54.5
565	30.2	720	11.7	870	53.9
570	29.6	725	11.1	875	53.3
575	29.0	730	10.5	880	52.7
580	28.4	735	09.9	885	52.1
585	27.8	740	09.4	890	51.5
590	27.2	745	08.8	895	50.9
595	25.6	750	08.2	900	50.3
600	26.0	755	07.6	905	49.7
605	25.4	760	07.0	910	49.1
610	24.8	765	06.4	915	48.5
615	24.2	770	05.8	920	47.9
620	23.6	775	05.2	925	47.3
625	23.0	780	04.6	930	46.6
630	22.4	785	04.0	935	46.0
635	21.8	790	03.4	940	45.4
640	21.2	795	02.8	945	44.8
645	20.6	800	02.2	950	44.2
650	20.1				

Kosmin Test
for 1500m Athletes

4 x 60 secs (maximal effort) [3mins, 2mins, 1mins]

DISTANCE	FORECAST 1500m	DISTANCE	FORECAST 1500m	DISTANCE	FORECAST 1500m
1300	4:49.7	1455	4:24.6	1610	3:59.5
1305	48.9	1460	23.8	1615	58.7
1310	48.1	1465	22.9	1620	57.9
1315	47.3	1470	22.1	1625	57.1
1320	46.5	1475	21.3	1630	56.3
1325	45.6	1480	20.5	1635	55.4
1330	44.8	1485	19.7	1640	54.6
1335	44.0	1490	18.9	1645	53.8
1340	43.2	1495	18.1	1650	53.0
1345	42.4	1500	17.3	1655	52.2
1350	41.6	1505	16.5	1660	51.4
1355	40.8	1510	15.7	1665	50.6
1360	40.0	1515	14.9	1670	49.7
1365	39.2	1520	14.1	1675	48.9
1370	38.4	1525	13.2	1680	48.1
1375	37.5	1530	12.4	1685	47.3
1380	36.7	1535	11.6	1690	46.5
1385	35.9	1540	10.8	1695	45.7
1390	35.1	1545	10.0	1700	44.9
1395	34.3	1550	09.2	1705	44.1
1400	33.5	1555	08.4	1710	43.2
1405	32.7	1560	07.6	1715	42.4
1410	31.9	1565	06.8	1720	41.6
1415	31.1	1570	05.9	1725	40.8
1420	30.3	1575	05.1	1730	40.0
1425	29.5	1580	04.3	1735	39.2
1430	28.7	1585	03.5	1740	38.4
1435	27.8	1590	02.7	1745	37.6
1440	27.0	1595	01.9	1750	36.7
1445	26.2	1600	01.1	1755	35.9
1450	25.4	1605	00.3	1760	35.1

Altitude training on a shoestring

"*Cecyte, Cecyte, vamos a Cecyte*," cries the 15 year old bus driver as I leap onto the bus back home. "*Cuanto cuesta*?", I enquire. "*1.10 pesos*," (about 9p) he squeals back, in a still unbroken voice.

Amongst assorted chickens, hombres sporting sombreros and screaming school kids I somehow squeeze my six feet two inches into a seat, my legs diagonalised in a space designed for a Zapotec Indian, averaging a foot less. Looking around I realise that my performance has drawn the eyes of everyone on the bus. I wonder what they would all make of my seemingly aimless running in circles.

I am in Oaxaca (*Wah-ha-ca*), Southern Mexico, at an altitude of about 1600m. I have just completed a session at El Tequio, an excellent public park which has a 5000m track, accurately marked out in 500m intervals. The thin air makes my 5:25 mile pace for the course feel like a world record. I feel good and I hope that I am getting stronger.

The bus lurches along, the driver apparently on a death wish. Dust borne on warm air blows in through the windows. It is the dry season. My sweaty body collects a thin film of fine red adobe dirt. Back home I imagine horizontal rain and a raw wind straight off the North sea. I definitely prefer dirt.

When not running, eating or sleeping what do I do here? The Zocalo, the central town square is an interesting place to sit, drink coffee and people watch. I was down there last week and witnessed a protest by the Trique Indians. They are demonstrating in front of the Palacio Municipal, the local government offices, about their land rights which are being abused by the present ruling party. The spectacle before me involves about thirty men, naked except for their loincloths. I decipher their chants, a mixture of Spanish and indigenous tongue, to mean that they are on hunger strike. They have not eaten food for 20 days they say. As I watch I find this fact hard to believe. None of them seem to be any thinner than me - I guess they have been sneaking a few tortillas while no one was looking. I am puzzled at these protests. Surely in this land of 'maqana' they would not find the time. The protest disbands when 30 minutes of heavy rain interrupt proceedings. A rare thunderstorm for the time of year.

I am living in a superb location for running. About 3 miles outside Oaxaca in a room of a large house, complete with a cook, a gardener and a maid. We are in the broad Oaxaca valley. Many dirt roads criss-cross fields between small villages. I run in the mornings on the level of the valley floor and for my longer and harder runs I can take any number of routes into the mountains or follow the contours at higher elevations.

Everywhere I run has views, fantastic panoramas set against the blue sky. The occasional stench or sight of rubbish, left by the Mexicans around their villages, is a small price to pay for this place.

Oaxaca is a colonial town of many churches, antiquities and much history. Long before the Spanish Conquistadors, existed the native Indians. The ruins of Monte Alban, are a fine example of the ingenuity of the Zapotecs 2000 years ago. They flattened a centrally located mountain, now about 10 km outside Oaxaca and built a city. The pyramids and temples which were built still stand.

It took me three or four weeks to acclimatise to the rarefied air up here. The first week was just jogging and walking. I monitor my heart rate frequently. The second week I would run maybe for 5 miles, my heart racing up to 160 with little speed. I must relax more. Sometimes when I wake and my heart bangs away at 55, I know to take it easier. Slowly but surely, I feel more comfortable. Still, I am surprised when that feeling of running with a Zapotec on my back reminds me that I am a mile high.

I close my eyes and snooze. In spite of the noise and the cramped seating my mind drifts off; I can daydream. I see what looks like a mountain range. The jagged serration of steep barren slopes. Could I run that ridge? It must be over 12,000 feet. I imagine myself taking two, maybe three hours. A steady paced mountain marathon. Easy... I say to myself. I'm not a long distance runner! Half a mile is enough for me. The sierra blurs. I am not looking at mountains any more but a thick red line.

Six peaks, sharp and canine. Along the left the numbers 150...160...170...180. What are these numbers? Not altitude, not metres, not feet. The thick red line is framed in liquid crystal. It's on my computer. I realise that I am looking at my last training session. At least what my heart did. Six times a quarter, two minutes rest. The line is the tell-tale signature of much sweat and blood and lactic acid. My heart rate monitor faithfully records every workout. I can't lie to it, it can't lie to me. Only the truth. How am I progressing? Slower or faster than I should be? I report my findings back to Cardiosport. It is only the beginning of a long experiment. The standing orders reward the Guinea pig; food water and a shelter. What more could I want?

I am eating well. The climate here makes it possible to grow just about any fruit or vegetable. Mangoes, oranges and pineapple are plentiful. I have not yet tried the local delicacy. Chapulines are fried grass-hoppers and an excellent source of protein I am told. My favourite drink is made from a flower, Jamaica. It looks and tastes just like cranberry juice - full of vitamins. The staple diet of the Mexicans is an excellent one for runners, beans, rice and maize tortillas. There is no BSE here, just mad dogs and wild dogs.

The damned dogs...! They keep me awake half the night. Mexicans do not keep dogs as pets, they keep them for protection. They are not allowed inside but roam free. They are also never neutered. Freely breeding dogs are everywhere. I never cease to be amazed by the strange breed permutations sulking on the streets. During the heat of the day the dogs laze in the sun but at night their vast communication network echoes through the valley. They conspire to prevent newcomers like me from sleeping.

How does it feel to be here? I don't really know. I train hard. I put up with the dust, the buses, the incessantly barking dogs and being away from friends and family,. I have never run harder. I enjoy the challenge, a new place, a foreign country. I read of Tony Blair or the British weather on the Internet. Excepting my speed sessions with local sprinters, I always run alone. That's no different from Edinburgh. Would I recommend it? Ask me in six months.

My bone-shaker bus jerks to a halt and I dismount, the lactic acid efficiently shaken from my tired muscles. I walk past the Cecyte sign and contemplate. Tomorrow's ten miler plus my previous fifty two will give me sixty two miles for the week. Here in Mexico that's 100 kilometres.

BAHRAIN RELAY

BMC Athletes Abroad

Last November several BMC members took some time out from the depths of the British winter to compete in the Bahrain International Marathon Relay which comprised of 20 stages of roughly 3k each. They were invited to compete for the Saudi Arabian SAAD Track Club at the request of the club's coach and BMC member, Ian Wilson. To say that the BMC/SAAD athletes dominated the event would be an understatement! The men's and women's teams both won by many minutes and set no less than 33 stage records.

SAUDI ARABIA

If any BMC members are interested in a training trip to Saudi Arabia they may contact Ian Wilson at Saudi Aramco, P.O. Box 11838, Dhahran 31311, Saudi Arabia, by E-Mail at 104321.514@compuserve.com or by phone/fax on 010-966-3-878-2182.

ROB HOOTON in MEXICO

Elsewhere in this issue Rob Hooton reports on his experiences in Mexico. The following article appeared in The Times on Wednesday, 19th March 1997.

Rob Hooton training in Mexico: "An athlete in tune with the times"

As star middle-distance runner Rob Hooton clocks up 60 miles a week training high in the mountains of Mexico, his heartbeat is being constantly monitored by his wristwatch.

And the data it collects is sent via computer to his advisers around the world, allowing them to chart his progress with pinpoint accuracy.

The data is so accurate that Hooton, now rated sixth best middle-distance runner in Britain, turned down a date to run in the US in May - "I knew I wouldn't be ready," he says; but has set his sights on a British Milers' Club race in June.

"I use the technology to monitor interval training," says the 23-year-old Edinburgh athlete. "I run six bursts of 400 metres, with a short rest between each one. I have a strap around my chest, with a couple of electrodes that pick up my heartbeat and transmit it to my watch every five seconds. When I get back to base I link the watch to my computer and upload the data. "I can look at my whole session - my times and how hard my heart was working relative to the times. I also e-mail the information to my advisers and they give me feedback."

When we run we breathe in oxygen which enters the lungs and goes into the air sacs.

BMC athletes who competed in Bahrain: (Left to right) Paul Freary, Ian Gillespie, Vicki Sterne, Steve Mosley, Gordon Reid, Sue Parker and Ian Wilson (team manager).

The physics graduate has already been training for two years in preparation for the 1998 Commonwealth Games. He keeps meticulous records of his training regime on his Compaq notebook, and has written his own programs to analyse the information in an Excel spreadsheet.

"There is commercial software to do this sort of thing, but it is not quite how I want it," he says. "Since I can use a computer, I thought I may as well analyse the data in my own way. "I don't know any other athlete who takes such detailed records, or uses heart rate information as much as I do. I'm really doing an experiment, but I think it is helping. I hope it will show which kinds of training are most effective, and help me reproduce my peak performances. "If you have trained hard and meticulously, that gives you a great mental edge when you race."

In his gruelling five-month sojourn in Oaxaca, Mexico, living and training at 5,000ft above sea level, Hooton relies on e-mail to keep in touch with fellow runners all over the world, and also chats to his family in Scotland. Soon Hooton's competitors will also be able to benefit from his technical skills. He has teamed up with Edinburgh firm Cardiosport to develop new software that helps athletes monitor their fitness.

BMC's web site is at: http://www. british-athletics.co.uk/bmc/ and Hooton's site is at http://www.paradoxcafe. com/runner/. From there it is diffused into the blood-stream. The main task of blood is to convey oxygen to

Are you full blooded?

by Frank Horwill

all parts of the body. The amount of blood available during exercise is governed by a pump - the heart. An unfit heart will reach maximum pumps per minute sooner than a fit one given the same physical task.

There are three ways to increase the quantity and quality of blood:

1. Living and training at an altitude of about 2000m above sea level for a month. Because of the lack of air pressure, the body compensates for this within seven days by increasing the number of red cells and also by increasing the oxygen carrying powers of haemoglobin (the red part of our blood).
2. The process of blood boosting. A litre of one's blood is withdrawn from a vein and put into storage. The body quickly detects this loss and starts to make up the deficit and achieves this after 28 days. The blood previously removed is re-infused and this increases the body's haemoglobin by about 10%. One gram of haemoglobin conveys 1.34ml of oxygen. Normal haemoglobin levels for women are 13g/100ml, and for men - 15g/100ml. This 10% boost will increase physical performance by the same percentage, a major factor in predominantly aerobic activities such as distance running. The practice is banned by the IOC but, as yet, there is no satisfactory test for its detection.
3. Blood boosting without blood removal. The hormone which stimulates the replacement of blood as described in (2) above, is called erythropoietin (EPO) and comes from the kidney. If EPO is injected directly into the body, as it is with patients with malfunctioning kidneys, it will increase the number of red cells and subsequently, physical performance. However, EPO can only be given under medical supervision as it can have serious side-effects. Its use is banned by the IOC. Up to now, it has been undetectable.

A survey conducted by the British Milers' Club among its 600 members in 1972 revealed that 40% of females and 10% of males had suffered from professionally diagnosed anaemia at some time in their athletic career. Anaemia is where the blood has considerably reduced oxygen-carrying properties. This is commonly judged by the haemoglobin count, but it is now known that this does not reveal the true picture. In 1984, Alberto Salazar, one of the world's fastest

The principle of interval training or doing repetitions of an activity became firmly established in all sport in the early 1950s. It probably owes its origin to the two Swedish runners Hagg and Anderson, who ran fast stretches of a 5k course through forests which were followed by periods of jog recovery. However, it was Gerschler, who gave it precision and a scientific basis. He claimed marathon runners, developed serious anaemia but his serum iron and haemoglobin levels showed up normal. To understand how this can happen we must explore the role of blood more fully. The main job of iron is to form part of haemoglobin, the red pigment that carries oxygen in the bloodstream from lungs to muscles and the brain. It also forms part of numerous vital enzymes. About a third of our iron is in storage form as ferritin and haemosiderin, stored mainly in the bone marrow and liver. It is the loss of this store that devastates many sportspeople.

Iron is freely available in whole grains, vegetables, meats, and eggs, and is added to many processed foods. In spite of iron availability, iron deficiency in serious sportspeople is rampant. One of the reasons for this is the problem of absorbing it from food, and some foods render it almost useless. For example, coffee taken just before or after a meal, will reduce iron absorption by one-third. Tea is worse - iron absorption is reduced by two-thirds. These beverages should not be consumed in the two hours before a meal or for an hour afterwards. Iron from meat is 10% bio-available but only 1% from vegetables. Vitamin C, found in most fruits, helps absorption, whereas excessive calcium, fibre and antacids all hinder it.

Serum ferritin is an accurate measure of iron store. On medical blood count reports, the figure to look for is 350µg per 100ml of blood. A much lower figure than this warrants medical investigation. An important discovery has been made about low serum ferritin counts: you are three times more likely to get injured pursuing your sport. This is because your muscles will tire more quickly and consequently give less support to tendons and ligaments. There is also evidence that seriously low serum ferritin levels may permanently reduce physical performance, causing changes in the bone stem cells that grow into blood cells, and probably in muscle cells themselves.

The red cells that carry oxygen, called erythrocytes, constitute 35-50% of our blood. The remainder is mostly plasma fluid with a smattering of the white cells of the immune system. The proportion of blood made of red cells is measured by the haematocrit. A haematocrit of 50% provides 25% more red blood cells than one of 40%, with a similar increase in the maximal oxygen delivery to the muscles. Elevating the haematocrit is a major aid to performance.

Each red cell is 25-35% haemoglobin. The greater amount of this per cell, the greater the possible amount of oxygen delivered to muscles. However, using more than 100mg of iron per day as a supplement to boost this level has unpleasant side-effects, the most serious being an increase in susceptibility to infections. That said, a mere drop of 10% in haemoglobin levels can reduce performance by 20-25%. Sweating during exercise loses iron at the rate of 0.5mg an hour, that's 1.5mg in a tough three-hour training session. Red cells are also lost by haemolysis (destruction of red cells) due to compression haemolysis, that is the crushing of blood cells by intense muscle contraction. This was once attributed to foot-strike haemolysis found in runners, but it has also been found in swimmers, oarsmen and cyclists, whose feet do not strike the ground.

The RDA of iron for women is 15mg and 10mg for men. However, the iron requirements per day for a serious sportspeople are much higher: 41mg for women, and 36g for men. Unfortunately a survey of athletes' diets revealed that they contained only 6mg of iron per 1,000 calories, therefore to achieve the above recommendations an intake of 6,000 calories a day would be required by males and 7,000 calories by females. This may be feasible for power performers, but not for those who require speed of movement. A 20-25mg iron supplement per day makes good sense. But, there is a problem - iron by itself hardly works at all. It needs to link in synergy with a whole lot of other blood-building nutrients.

A formula for maximum blood enrichment has been devised by the Colgan Institute in San Diego, California, which can lead to the oxygen update (VO_2 max) being increased by 8-18%. That's terrific! First, you need to eat moderate meals every 4 hours, ensuring a daily intake of fruit, vegetables, cereals, fish and low-fat meals. All highly-saturated fat foods should be avoided. The following are taken daily: 2.4mg of folic acid, 100µg of vitamin B12, 150mg of vitamin B6, 500mg of vitamin C, 48mg of ferrous fumerate (iron), 60mg of zinc and 50mg of vitamin E (tocopherol). By farming around shops, a two months' supply of these can be bought for about £35. When competing, you will know that at least you possess good red blood.

A Question of Recovery

by Frank Horwill

that by running 100, 200 and 600m, 3, 6, and 18 secs respectively slower than for one's best for those distances, followed by a recovery where the heart-rate dropped to 120 bpm within 90 secs, would, in 6 weeks achieve greater fitness than by running for 1 hour daily for 12 weeks. Gerschler gave credence to his views when he announced that his ideas were based on the observations of 3,000 subjects, mostly soldiers.

Fox and Matthews in 1976, added further evidence for the logic of repetition running. They postulated that if a person ran a mile in 4:40 and then on another day ran 4 intermittent runs of 440y at the same speed with 1-min. rest, the same amount of work at the same intensity was performed, however, the fatigue following the intermittent runs would be noticeably less, therefore it would be possible to run 8 x 440y in the same manner and improve performance.

When Roger Bannister first broke 4 minutes for the mile, he revealed in a subsequent book 'First Four Minutes', that his basic training routine was 10 x 440y with 440y jog, or 5 x 880y with 880y jog, and occasionally 2 x ¾ mile with equal distance jog. This led to a mimicking of his methods by thousands of athletes, some of whom thought that when they could run 10 x 440y in 60 secs followed by a lap jog, which might take anything from 2-3 mins, they were ready to duck under 4 minutes. This was usually not true for the simple reason that runners do not get 2-3 mins' recovery after each lap of a mile, they get none! What was not revealed in Bannister's book was that once a week he did the "dreaded" session of 3 x 1.5 miles at 4:40/mile pace, with complete recovery (5 mins). He admitted later that he omitted this from his book because he did not wish young athletes to emulate him in this sphere because it was too strenuous a session.

In the 1960s, Mihaly Igloi, said that the jog recovery after repetitions should be *half-distance jog* of the rep., e.g. 4 x 800m, jog 400m. In the 1970s, Ekbom, ruled that it would be better to jog a *quarter* of the distance of the rep. to acclimatise better to race conditions, e.g. 10 x 400m, jog 100m.

At this juncture, Soviet physiologists became interested. Twelve female physical education students were asked to run 10 x 400m in 80 secs every other day for 6 weeks. Half jogged 400m recovery within 3 mins, and half, 200m recovery within 90 secs. At the end of the period they were all VO_2 max tested. The 90-seconds recovery group showed the greater improvement. This led the Russians to conclude - *the recovery time after repetitions is a factor that cannot be ignored in any training programme*.

Critics of this research point out that it does not take into account the possibility that the 3-minute recovery group could have run their 400s faster and thereby altered the result. The practical evidence does not point to this being so. The author knows of one noted British road-runner, whose staple session for the 5k event was 12 x 400m in 56-60 secs. with 400m jog recovery, which is inside world record pace for 5k, however, he ran 13:40 for the 5k distance eleven times and could not improve. On the other hand, a Scottish 800 metre runner's main session was 4 x 400m in 53 secs with 1 minute recovery, which resulted in a 1:47 performance. He, of course, also did much sprint training and 1 hour steady runs.

When the author was formulating his 5-pace system of training (as used by Sebastian Coe), he felt it was illogical to use the same period of recovery when training at 5k speed as was used when training at 800m speed. The first may be 12 secs per 400m slower than for the second. On the other hand, the recovery should be long enough for the target time of the repetition to be achieved with some difficulty. He proposed the recoveries in Table 1. The basic theme of this is that as distances increase and the pace decreases, the recovery period follows suit.

Severe as the Table 1 may appear, Coe made it more severe by halving the recovery period when doing repetitions in sets, e.g., 4 x 400m at 800m speed with 3 mins recovery, became 2 x 2 x 400m in 52 secs with 90 secs rest, with 3 mins rest after the first set, or 2 x 2 x 800m in 2 mins with 90 secs rest, and 3 mins after the set. It is suggested that straight-through reps are done one week, followed by reps in sets the next week.

Fox and Matthews discovered that different energy pathways were used at different speeds of repetitions and that the duration of the rep. affected the energy pathway concerned. These pathways needed replenishing before the next rep. proceeded. E.g., a 60m sprint x 5 which took 7 secs and involved the ATP-PC pathway, only requires 21-secs rest for restoration (3 times the time of the rep.), however, a lap walk was to be taken after each set of 5 reps. More startling, was that 8 x 100m full-out sprints, which uses the same system, only requires 3 times the time of the run as recovery, e.g. 11 secs for 100m, 33 secs recovery.

When the ATP-PC-LA system is involved with 4 x 200m full out in 24 secs, they still adhere to the 1:3 ratio, i.e. 72 secs rest. But, where 8 x 400m fast is done they split it into 2 x 4 x 400m, with twice the time of the rep as recovery, 400m in 52 secs, recovery 104 secs. A lap walk is done after the first set.

The LA-O_2 pathway involving 5 x 600m fast (90 secs) is followed with double time (180 secs) rest. But, 4 x 800m fast (2 mins), is split into 2 x 2 x 800m fast with equal time recovery, i.e. 2 mins and a lap walk after the first set. For the aerobic pathway, where reps. exceed 3 mins, they advocate half the time of the rep. as recovery, e.g. 6 x 1 mile in 5 mins, 2.5 mins recovery. They recommend that all recovery time is spent walking or jogging to dissipate waste products produced by the activity.

It has long been recognised that the time it takes for the pulse to recover after an activity is an indication of fitness. Gerschler used 120 bpm as a rule-of-thumb, Fox and Matthews use 130 bpm. This is a reasonable method of recovery after reps., for it is obvious that an athlete who does 4 x 400m in 52 secs will take longer to recover than one doing 8 x 400m in 60 secs given the same fitness level. High lactate-level training as required for the 800m event can be induced by only allowing the pulse rate to fall to 140 bpm.

The inescapable facts are that world-class 10k running requires 25 consecutive laps of 65 secs per 400m, 5k running needs 12.5 back to back laps of 62 secs, 3k racing warrants continuous laps of 60 secs, 1500m needs laps of 56 secs and the 800m calls for two laps together of 51 secs each. We will not achieve these continuity of times if we have a cup of tea and a bun after repetitions at those speeds!

Pace	Session	Recovery Jog	Duration
400m	4 x 200m	400m (Double)	3 mins
800m	4 x 400m	400m (Equal)	3 mins
1500m	4 x 800m	400m (Half)	3 mins
3k	3 x 1500m	400m (Quarter)	3 mins
5k	4 x 1600m	200m (Eighth)	90 secs
10k	2 x 5k	300m (Sixteenth)	135 secs

Table 1: Recovery Table

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

These statistics have been compiled from *Athletics Weekly* 1963 - 1991, and the *BMC News* from 1992 - 1996. Unfortunately results of the Stretford meetings were often incomplete when published in AW. Where it is known from the NUTS rankings that a fast race took place at Stretford but the result has either not been found in AW or is listed as "Invitation" but makes no mention of the BMC, those performances have been listed in italics with a 'q' as questionable. We would welcome independent confirmation as to whether these were in fact BMC races. * denotes non-member and J a performance as a junior.

Men's 600m

1:18.5	Steve Ovett	1	Crystal Palace	12	May	76
1:18.5	Andy Knight	1	Highgate	7	Aug	96
	1:19.1	1	Sutcliffe Park	20	Apr	96
1:18.6	Gary Brown	1	Grangemouth	3	Aug	94
1:18.7	* Pete Lewis	2	Crystal Palace	12	May	76
1:19.3	* Babacar Niang SEN	1	Battersea Park	19	Apr	97
1:19.4	Jason Dupuy	2	Sutcliffe Park	20	Apr	96
1:19.4+	Robin Hooton	1+	Wythenshawe	30	Jul	96
1:19.5	* Peter McDevitt	2	Grangemouth	3	Aug	94
1:19.6	* Peter Crampton	1	Wythenshawe	17	May	95
1:19.8	Jason Thompson	3	Sutcliffe Park	20	Apr	96

11 performances to 1:20.0 by 10 athletes

Men's 800m

1:46.4	* Paul McMullen USA	1	Stretford	1	Aug	95
	1:48.1	1r2	Stretford	18	Jul	95
1:46.83	* Benson Koech KEN	1	Crawley	28	May	94
1:47.3	* Gary Cook	1	Stretford	3	Jun	80
1:47.52	* Andrew Lill	2	Crawley	28	May	94
1:47.6	* Neil Horsfield	1	Cwmbran	16	Aug	89
1:47.6	* Craig Winrow	2	Stretford	1	Aug	95
	1:48.3	1	Wythenshawe	15	May	96
1:47.7	Sebastian Coe	1	Stretford	8	Aug	76
1:47.7	Robin Hooton	1	Wythenshawe	30	Jul	96
	1:49.0	3	Watford	5	Jun	96
1:47.8	Lee Cadwallader	1	Stretford	22	Aug	95
	1:48.5	2	Wythenshawe	15	May	96
	1:49.0	1	Stretford	27	Jun	95
	1:49.1	2	Loughborough	18	May	96
	1:49.2	1	Stretford	20	Jul	93
	1:49.2	2	Stretford	25	Jun	96
	1:49.23	1	Loughborough	11	Jun	95
1:47.9	* Dave Warren	1	Crystal Palace	12	May	80
	(10)					
1:47.9	Rupert Waters	2	Wythenshawe	30	Jul	96
	1:48.7	1	Battersea	14	Jul	96
	1:49.0	4	Watford	5	Jun	96
1:48.0	* Colin Campbell	1r2	Crystal Palace	12	Jun	72
1:48.0	* Kevin McKay	3	Stretford	1	Aug	95
	1:48.5	2	Stretford	16	Jul	96
	1:48.9	2	Wythenshawe	17	May	93
	1:49.3	5	Wythenshawe	15	May	96
1:48.0	Andy Hart	1	Watford	5	Jun	96
	1:48.2	1	Birmingham	20	Aug	95
	1:48.5	1	Solihull	29	Jul	92
	1:48.7	1	Stretford	25	Jun	96
	1:48.8	1	Cheltenham	21	Jul	93
	1:49.0	1	Loughborough	18	May	96
	1:49.2	1	Stretford	5	Sep	95
	1:49.3	2	Stretford	27	Jun	95
	1:49.3	6	Wythenshawe	15	May	96
	1:49.5	1	Solihull	26	Jul	95
1:48.2	James Mayo	3	Wythenshawe	30	Jul	96
	1:48.7	1	Stretford	3	Sep	96
1:48.3	* Gary Lough	1	Milton Keynes	24	Jul	96
	1:48.7	7	Wythenshawe	30	Jul	96
1:48.4	Tony Johnston	1	Stretford	16	Jul	96
	1:49.4	1	Tooting	29	May	96
1:48.4	Bradley Donkin	4	Wythenshawe	30	Jul	96
1:48.5	* Jason Lobo	2	Stretford	22	Aug	95
	1:48.8	3	Wythenshawe	15	May	96
	1:49.3	1	Stretford	23	Aug	94
1:48.5	Eddy King	5	Wythenshawe	30	Jul	96
	1:48.9	4	Wythenshawe	15	May	96
	1:49.47J	3	Solihull	21	Aug	94
	(20)					
1:48.7	Andrew Carter	1	Blackburn	9	May	70
1:48.7	Des English IRE	1	Wythenshawe	17	May	93
	1:48.8	1	Watford	28	Aug	96
1:48.7	Tony Morrell	3	Stretford	22	Aug	95
1:48.7	Andy Knight	6	Wythenshawe	30	Jul	96
	1:49.21	1	Solihull	21	Aug	94
	1:49.3	2	Battersea	14	Jul	96
	1:49.5	5	Watford	5	Jun	96
1:48.8	* Jim Espir	2	Crystal Palace	12	May	80
1:48.8J	Adam Duke	2	Solihull	29	Jul	92
	1:49.3	3	Battersea	14	Jul	96
	1:49.5	7	Wythenshawe	15	May	96
1:48.9	* Steve Green JAM	4	Stretford	22	Aug	95
1:48.9	Justin Swift-Smith	2	Watford	5	Jun	96
	1:49.2	9	Wythenshawe	30	Jul	96
	1:49.42	2	Solihull	21	Aug	94
	1:49.5J	2	Cheltenham	21	Jul	93
	1:49.5	4	Loughborough	18	May	96
1:48.95	* Mike Guegan	3	Crawley	28	May	94
1:49.0	* F MacSweeney IRE	1	Crystal Palace	22	May	76
	(30)					
1:49.0	Hamish McInnes	1	Stretford	17	May	83
1:49.0	* Martin Steele	1	Leeds	1	Jul	86
	1:49.4	1	Wythenshawe	17	May	95
1:49.2	Richard White	2	Cwmbran	16	Aug	89
1:49.2	* Matt Hibberd	1	Stretford	21	Jul	92
	1:49.5	1	Stretford	7	Sep	93
1:49.2	* Mark Russell	3	Solihull	29	Jul	92
1:49.2	Peter Hackley	1	Stretford	27	Apr	93
1:49.2	Ewan Calvert	2	Birmingham	20	Aug	95
	1:49.3	2	Stretford	23	Aug	94
1:49.2	Grant Graham	3	Loughborough	18	May	96
1:49.2J	Tom Lerwill	1	Watford	29	May	96
1:49.2	Glen Stewart	8	Wythenshawe	30	Jul	96
	(40)					
1:49.3	* John Evans	1	Stretford	16	Jul	91
1:49.3	Ian Grime	10	Wythenshawe	30	Jul	96
1:49.4	Colin Cusick	1	Crystal Palace	18	Aug	71
1:49.4	Stuart Margiotta	2	Milton Keynes	24	Jul	96
1:49.4	Mark Sesay	2	Stretford	3	Sep	96
1:49.5	* James Moseley	1	Crystal Palace	12	Aug	81
1:49.5	Bob Benn	2	Crystal Palace	12	Aug	81
1:49.5	Ian Hamer	3	Cwmbran	16	Aug	89
1:49.5	Matt Barker	1	Cwmbran	8	Aug	90
1:49.5	Paul Roberts	3	Wythenshawe	17	May	93
	(50)					
1:49.5	Neil Caddy	5	Loughborough	18	May	96

93 performances to 1:49.5 by 51 athletes

Men's 1,000m

2:21.7	* Kevin McKay	1	Stretford	30	Apr	96
2:22.0	Richard Lynch	1	West London	3	Jun	92
2:22.0	* Steve Green JAM	1	Stretford	18	Jul	95
	2:23.7	6	Stretford	30	Apr	96
2:22.2	Walter Wilkinson	1	Cleckheaton	30	Jun	76
2:22.2	* Neil Horsfield	1	Cheltenham	2	Aug	89
2:22.6	* Craig Winrow	2	Stretford	30	Apr	96
2:22.7	* Matthew Hibberd	2	Stretford	18	Jul	95
	2:23.3	3	Stretford	30	Apr	96
2:23.2	Stuart Margiotta	3	Stretford	18	Jul	95
2:23.4	Steve Ovett	1	Crystal Palace	8	Jul	79
2:23.4J	Justin Swift-Smith	1	Yate	3	May	93

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

	(10)					
2:23.4	Robert Hough	4	Stretford	30	Apr	96
2:23.5	Luc Michard BEL	5	Stretford	30	Apr	96
2:23.8	Ian Gillespie	2	Yate	3	May	93

15 performances to 2:24.0 by 13 athletes

Men's 1,200m

2:57.0	Paul Williams	1	Crystal Palace	13	Dec	78
2:57.6	Tim Hutchings	2	Crystal Palace	13	Dec	78
	2:58.9	1	Aldershot	25	May	77
2:57.8	Jim Douglas	1	Crystal Palace	16	Apr	75
2:58.2	Glen Grant	2	Crystal Palace	16	Apr	75

5 performances to 3:00.0 by 4 athletes

Men's 1,500m

3:39.0	* David Lewis	1	Stretford	9	Aug	83
	3:42.7	2	Stretford	20	May	86
	3:42.8	2	Stretford	30	Aug	86
3:39.1	Neil Caddy	1	Swindon	14	Aug	96
	3:42.1	1	Southampton	3	Sep	95
	3:42.2	1	Wythenshawe	17	May	95
	3:42.3	1	Cardiff	7	Aug	96
3:40.1	Ian Grime	2	Swindon	14	Aug	96
	3:40.35	1	Solihull	21	Aug	94
3:40.7	Rob Whalley	3	Swindon	14	Aug	96
3:41.02	Steffan White	2	Solihull	21	Aug	94
3:41.1	Ian Gillespie	4	Swindon	14	Aug	96
	3:41.65	4	Solihull	21	Aug	94
	3:42.4	2	Stretford	16	Jul	96
	3:42.7	5	Wythenshawe	30	Jul	96
3:41.2	Richard Ashe	1	Wythenshawe	30	Jul	96
	3:42.5	1	Watford	10	Jul	96
	3:42.9	1	Watford	9	Aug	95
3:41.28	* Davy Wilson	1	Belfast	4	Jun	94
3:41.3	Rob Scanlon	5	Swindon	14	Aug	96
3:41.5	* Ken Newton	2	Stretford	9	Aug	83
	(10)					
3:41.5	Robert Hough	1r2	Wythenshawe	30	Jul	96
3:41.6+	Nick Rose	1+	Motspur Park	25	Jul	73
3:41.63	Phil Mowbray	3	Solihull	21	Aug	94
3:41.73	* Matt Hibberd	5	Solihull	21	Aug	94
	3:42.5	1	Loughborough	7	Sep	94
3:42.0	Andy Hart	1	Stretford	16	Jul	96
	3:42.7	3	Wythenshawe	17	May	95
3:42.0	Rod Finch	2	Wythenshawe	30	Jul	96
3:42.1	Martin Forder	3	Wythenshawe	30	Jul	96
3:42.2	* Tim Redman	3	Stretford	9	Aug	83
3:42.2J	Paul Wynn	4	Stretford	9	Aug	83
	3:42.3	1	Stretford	24	Jun	86
3:42.3	* Geoff Turnbull	1	Stretford	20	May	86
	(20)					
3:42.4	* Steve Green JAM	2	Wythenshawe	17	May	95
3:42.4	* Neil Horsfield	1	Swindon	4	Sep	91
	3:42.8	2	Stretford	10	Jun	86
3:42.4	Stuart Margiotta	4	Wythenshawe	30	Jul	96
3:42.5J	* Colin Reitz	1	Crystal Palace	8	Aug	79
3:42.5	Adam Duke	6	Swindon	14	Aug	96
3:42.6+	* John Cadman	2+	Motspur Park	25	Jul	73
3:42.6	* Adrian Passey	1	Stretford	10	Jun	86
3:42.6	* Andrew Green II	2	Stretford	24	Jun	86
3:42.6	Paul Taylor	3	Stretford	24	Jun	86
3:42.7+	Phil Banning	3+	Motspur Park	25	Jul	73
	(30)					
3:42.7	Matt Barker	2	Swindon	4	Sep	91
3:42.7	Matt de Freitas	1	Swindon	9	Sep	92
3:42.7	* Gary Lough	1	Wythenshawe	18	May	94
3:42.8	* Lloyd Tredell	5	Stretford	9	Aug	83
3:42.8	Alan Mottershead	1	Stretford	30	Aug	86
3:42.8	* Steve Cram	2	Wythenshawe	18	May	94
3:42.8	Cormack Finnerty IRE	7	Swindon	14	Aug	96
3:42.9	* Neil Rimmer	3	Stretford	30	Aug	86
3:43.0	Dave Moorcroft	1	Loughborough	5	Jun	75
3:43.0	Gary Brown	4	Wythenshawe	17	May	95
	(40)					
3:43.0	Matt Skelton	6	Wythenshawe	30	Jul	96
3:43.0	Stuart Poore	8	Swindon	14	Aug	96

57 *performances to 3:43.0 by 42 athletes*

Men's Mile

3:56.35	Anthony Whiteman	1	Barnet Copthall	31	Aug	96
3:56.6	Tim Hutchings	1	Aldershot	19	Jul	82
	3:58.6	1	Derby	6	Sep	83
	3:59.1	1	Bristol	14	Sep	88
3:57.0	* Dick Quax NZ	1	Southgate	18	Jul	73
3:57.4	* Tony Polhill NZ	2	Southgate	18	Jul	73
3:58.0	John Kirkbride	1	Motspur Park	23	Jul	69
3:58.4	Alan Simpson	1	Hartlepool	17	Jun	67
3:58.4	Nick Rose	1	Motspur Park	25	Jul	73
	4:00.0	1	West London	16	Jul	75
3:58.5	Jim Douglas	2	Motspur Park	23	Jul	69
3:58.59	Neil Caddy	2	Barnet Copthall	31	Aug	96
	3:59.3	1	Cheltenham	4	Aug	96
	3:59.6	1	Cheltenham	6	Aug	95
3:58.6	John Boulter	1	Motspur Park	24	Jul	68
	3:59.2	3	Motspur Park	23	Jul	69
	(10)					
3:58.8q	*Dave Moorcroft*	*1*	*Stretford*	*30*	*Aug*	*75*
3:58.9q	** Frank Clement*	*2*	*Stretford*	*30*	*Aug*	*75*
3:58.9	* Steve Emsom	1	Stretford	31	Jul	79
3:59.1	Ian Hamer	1	Cheltenham	8	Sep	89
	3:59.9	1	Swindon	16	Jul	88
3:59.2	Walter Wilkinson	1	Stretford	28	May	68
	3:59.4	1	Middlesborough	11	Sep	67
	3:59.6	1	Hartlepool	7	Jun	69
3:59.2q	*Jim McGuinness*	*3*	*Stretford*	*30*	*Aug*	*75*
3:59.3	* Pat Scammell AUS	2	Cheltenham	8	Sep	89
3:59.3	Ian Gillespie	1	Salisbury	4	Sep	93
3:59.4	* Roy Young	1	Motspur Park	14	Jul	71
3:59.4J	Steve Ovett	1	Haringey	17	Jul	74
	(European Junior Record)					
	4:00.0J	2	Motspur Park	25	Jul	73
	(European Junior Record)					
	(20)					
3:59.4q	*Tony Settle*	*4*	*Stretford*	*30*	*Aug*	*75*
3:59.4	John Gladwin	1	Carlisle	4	May	87
3:59.5	John Whetton	2	Motspur Park	24	Jul	68
3:59.6	* David Lewis	1	Stretford	27	Jul	82
3:59.7q	*David McMeekin*	*5*	*Stretford*	*30*	*Aug*	*75*
3:59.7q	*Ron McDonald*	*6*	*Stretford*	*30*	*Aug*	*75*
3:59.7	Matt de Freitas	2	Salisbury	4	Sep	93
3:59.8	Ray Roseman	4	Motspur Park	23	Jul	69
3:59.8	* Steve James	1	Nottingham	9	Jun	84
3:59.9	* Joe Dunbar	1	Ealing	18	Sep	91
	(30)					
3:59.98	Richard Ashe	3	Barnet Copthall	31	Aug	96
4:00.0	* Neil Horsfield	2	Bristol	14	Sep	88
4:00.0	Rod Finch	1	Exeter	22	Aug	93
4:00.0	* Gary Lough	2	Cheltenham	4	Aug	96

44 performances to 4:00.0 by 34 athletes

Men's 2,000m

5:11.0	Walter Wilkinson	1	Crystal Palace	16	Aug	72
5:11.8	* Ian Wheeler	1	Hayes	15	May	66
5:15.0	* Christopher Ward	2	Hayes	15	May	66
5:16.6	Hugh Barrow	1	Stretford	10	Sep	66
5:18.6	* Alan Dean	2	Stretford	10	Sep	66
5:19.0	* James Freeman	3	Stretford	10	Sep	66
5:19.6	Wayne Speake	1	Millfield	21	Apr	90

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

5:20.0J	Glen Grant	2	Crystal Palace	16	Aug	72

8 performances to 5:20.0 by 8 athletes

Men's 3,000m

7:52.6	Rob Whalley	1	Stretford	16	Jul	96
	8:04.0	1	Watford	5	Jun	96
7:52.9	Robert Hough	2	Stretford	16	Jul	96
7:54.10	* Barry Smith	1	Cwmbran	17	May	81
7:55.4	Ian Grime	3	Stretford	16	Jul	96
7:55.6	* Geoff Turnbull	1	Stretford	15	May	84
7:56.24	Bobby Farren	1	Solihull	21	Aug	94
7:58.4	Spencer Barden	4	Stretford	16	Jul	96
	8:00.29	2	Solihull	21	Aug	94
7:58.6	* Chris Robison	1	Swindon	10	Jul	86
7:58.7	* Darius Burrows	5	Stretford	16	Jul	96
	8:01.26J	3	Solihull	21	Aug	94
7:58.9	* Chris Buckley	2	Swindon	10	Jul	86
	(10)					
7:59.22	* Jim Espir	2	Cwmbran	17	May	81
7:59.3	* Geoff Wightman	3	Swindon	10	Jul	86
7:59.5	* Paul Magner	4	Swindon	10	Jul	86
7:59.56	* David Clarke	3	Cwmbran	17	May	81
8:00.3	* Steve Anders	2	Stretford	15	May	84
8:00.3	Spencer Newport	6	Stretford	16	Jul	96
8:00.31	* Tony Blackwell	4	Cwmbran	17	May	81
8:00.9	Kim McDonald	1	Stretford	19	Jun	79
	8:03.4	1	Stretford	19	Jul	83
8:00.9	* John Doherty	1	Stretford	5	Jun	84
8:00.9	Ian Gillespie	1	Watford	9	Aug	95
	8:03.1	1	Cheltenham	20	Jul	94
	(20)					
8:01.8	* Steve Binns	2	Stretford	19	Jun	79
8:02.0	* Karl Harrison	3	Stretford	15	May	84
8:02.4	* Laurie Reilly	1	Stretford	22	Jun	76
8:03.38	* Sammy Bitok KEN	4	Solihull	21	Aug	94
8:03.5	Darren Daniels	2	Cheltenham	20	Jul	94
8:03.9	* Ian Hudspith	2	Watford	9	Aug	95
8:04.1	* Richard May	2	Stretford	19	Jul	83
8:04.5	* Michael Quinn	3	Stretford	19	Jul	83
8:04.5	* Darryl Smith	3	Watford	9	Aug	95
8:04.9	Julian Moorhouse	4	Watford	9	Aug	95
8:05.0	Brendan Foster	1	Wembley	4	May	74

36 performances to 8:05.0 by 31 athletes

Men's 2 Miles

8:44.6	Alan Blinston	1	Stretford	19	May	70

1 performance to 8:45.0 by 1 athlete

Men's 5,000m

13:46.4	* John Sherban	1	Crawley	28	May	94
13:47.0	* Dermot Donnelly	2	Crawley	28	May	94
13:48.9	* Jim Campbell	3	Crawley	28	May	94
13:55.7	* Chris Robison	1	Grangemouth	3	Aug	94
13:56.6	Ian Gillespie	1	Millfield	6	May	96
14:00.3	* Ian Hudspith	1	Loughborough	1	Jun	96
14:04.86	* Spencer Newport	1	Crawley	27	May	95
14:05.2	Dave Robertson	2	Loughborough	1	Jun	96
14:07.00	Tom Buckner	1	Loughborough	7	Sep	94
14:07.8	Julian Moorhouse	3	Loughborough	1	Jun	96
14:08.0	* Mike Baxter	1	St. Helen's	12	Aug	72
14:08.31	Ian Grime	2	Loughborough	7	Sep	94
14:09.2	* Peter Morris	2	St. Helen's	12	Aug	72
14:09.20	John Lisiewicz AUS	3	Loughborough	7	Sep	94
	14:14.4	5	Crawley	28	May	94
14:11.88	* Keith Cullen	4	Loughborough	7	Sep	94
14:12.0	Bobby Farren	4	Crawley	28	May	94
14:12.2	* Anthony Birks	3	St. Helen's	12	Aug	72
14:13.0	Keith Penny	1	Erith	26	Aug	74

19 performances to 14:15.0 by 18 athletes

Men's 10,000m

29:49.2	John Lisiewicz AUS	1	Oxford	17	Sep	94

1 performance to 30:00.0 by 1 athlete

Men's 4 x 400m Relay

3:16.0	Borough Road College	1	Crystal Palace	12	Oct	77
	(UK Junior Club Record)					

1 performance to 3:20.0

Men's 4 x 800m Relay

7:23.1	BMC National Squad	1	Watford	17	Jul	96
	(UK Club Record)					
7:26.2	BMC Junior Squad	1	Oxford	2	Sep	95
	(World Junior Record)					
7:26.2	Sale Harriers	2	Oxford	2	Sep	95
7:32.0	BMC Wales	3	Oxford	2	Sep	95
	(Welsh Record)					
7:37.1	BMC North	4	Oxford	2	Sep	95
7:37.5	BMC England	1	Oxford	17	Sep	94
7:37.7	BMC Junior Squad	2	Oxford	17	Sep	94
7:39.6	BMC South West	5	Oxford	2	Sep	95
7:41.3	Ron Allison's Squad	2	Watford	17	Jul	96
7:44.7	BMC Wales	3	Oxford	17	Sep	94
	(Welsh Record)					

10 performances to 7:45.0

Additional Age Group

7:46.9	BMC Wales Juniors	6	Oxford	2	Sep	95
	(Welsh Junior Record)					
7:51.5	BMC National U17s	1r2	Watford	17	Jul	96
	(UK National U17 Record)					

Men's 4 x 1,500m Relay

15:23.6	British Milers' Club	1	Crystal Palace	12	Aug	73
	(UK All-Comers Record)					
15:30?	West Germany	2	Crystal Palace	12	Aug	73
15:32.6	BMC National Squad	1	Stretford	30	Apr	96
15:37.4	SCAAA	3	Crystal Palace	12	Aug	73

4 performances to 16:00.0

Additional Age Group

16:03.2	BMC Junior Squad	2	Stretford	30	Apr	96
	(World Junior Record)					

Men's 4 x 1 Mile Relay

16:21.1	BMC National Squad	1	Oxford	10	Jul	93
	(UK All-Comers Record)					
16:27.8	BMC International	2	Oxford	10	Jul	93
16:28.9	BMC National Squad	1	Oxford	2	Sep	95
16:37.1	BMC National Squad	1	Oxford	17	Sep	94
16:40.0	BMC International	2	Oxford	2	Sep	95
16:44.2	BMC 'A'	1	Billingham	12	Jul	65
16:49.3	BMC South West	3	Oxford	10	Jul	93
16:51.8	BMC 'B'	2	Billingham	12	Jul	65
16:53.7	BMC North	4	Oxford	10	Jul	93
16:56.8	BMC Junior Squad	5	Oxford	10	Jul	93
	(World Junior Record)					

10 performances to 17:00.0

Women's 600m

1:29.4	Linda Staines	1	Battersea Park	19	Apr	97
1:31.1	* Gowry Retchakan	1	Highgate	7	Aug	96
1:31.2	Rachel Jordan	2	Battersea Park	19	Apr	97
	1:31.3	2	Highgate	7	Aug	96
1:31.6	Cathy Dawson	3	Highgate	7	Aug	96
1:31.8+	Michelle Faherty	1+	Wythenshawe	30	Jul	96
1:32.2J	* Jane Colebrook	1	Crystal Palace	12	May	74
1:32.6	* Susan Howell	1	West London	2	Apr	75

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

1:32.8J	* Lesley Pamment	2	Crystal Palace	12	May	74

9 performances to 1:33.0 by 8 athletes

Women's 800m

2:00.7	* Shireen Bailey	1	Ipswich	19	Jun	85
	2:01.7	2	Stretford	24	Jul	83
	2:02.0	1	Aldershot	19	Jul	82
2:01.3	* Ann Purvis	1	Stretford	24	Jul	83
	2:03.2	2	Ipswich	19	Jun	85
2:01.5	* Janet Bell	1	Stretford	23	Jun	85
	2:03.0	1	Carlisle	4	May	87
	2:05.0	3	Blackpool	2	May	88
2:02.0	* Jane Finch	3	Stretford	24	Jul	83
	2:02.6	1	Loughborough	1	Jun	78
	2:04.4	1	Loughborough	31	May	79
2:03.0	Kirsty Wade	2	Aldershot	19	Jul	82
	2:03.2	1	Aldershot	25	Jul	83
2:03.0	* Christina Cahill	4	Stretford	24	Jul	83
2:03.3mx	Ann Griffiths	1mx	Stretford	1	Aug	95
	2:04.3	2	Blackpool	2	May	88
	2:04.9mx	1mx	Stretford	18	Jul	95
2:03.6	* Debra Russell	3	Ipswich	19	Jun	85
2:03.67	Angela Davies	1	Solihull	21	Aug	94
2:03.7	* Diane Modahl	1	Wythenshawe	18	May	94
	2:03.9	1	Wythenshawe	17	May	93
	(10)					
2:03.8	* Lorraine Baker	4	Ipswich	19	Jun	85
2:03.8	Bev Hartigan	1	Blackpool	2	May	88
2:03.9	* Janet Marlow	1	Stretford	19	Jun	79
2:03.9	* Paula Newnham	1	West London	3	May	78
2:04.0	* Teena Colebrook	5	Stretford	24	Jul	83
2:04.1mx	Sonya Bowyer	1mx	Stretford	6	Aug	96
	2:04.75	1	Crawley	28	May	94
2:04.23	* C Wustenhagen GER	1	Crawley	27	May	95
2:04.3	* Angela Creamer	2	Stretford	19	Jun	79
2:04.3mx	Lynn Gibson	1mx	Watford	5	Jun	96
	2:04.8	1	Swindon	5	Aug	92
2:04.3R	Michelle Faherty	1re4	Watford	17	Jul	96
	2:04.4mx	1mx	Stretford	20	Aug	96
2:04.4	Thelwyn Bateman	1	Crystal Palace	24	Jul	71
2:04.4	* Suzanne Morley	3	Aldershot	19	Jul	82
	2:05.0	7	Stretford	24	Jul	83
2:04.6J	* Janet Lawrence	1	Stretford	26	Jul	77
2:04.6	* M Corcoran AUS	6	Stretford	24	Jul	83
2:04.6mx	Cathy Dawson	1mx	Ealing	13	Jul	94
2:04.7mx	Lynne Robinson	1mx	Solihull	6	Jul	94
2:04.8	* Penny Yule	2	West London	3	May	78
2:04.8mx	* Vicki Lawrence	2mx	Stretford	1	Aug	95
	2:04.8mx	2mx	Stretford	20	Aug	96
	2:04.9mx	1mx	Stretford	4	Jun	96
2:04.9mx	Sue Parker	2mx	Stretford	4	Jun	96

46 performances to 2:05.0 by 29 athletes

Women's 1,000m

2:44.9	Jo White	1	West London	5	Mar	80
2:47.3	Margaret Coomber	1	Crystal Palace	10	Jul	74
2:49.6	Margaret Beacham	2	Crystal Palace	10	Jul	74

3 performances by 3 athletes to 2:50.0

Women's 1,200m

3:23.4	* Christine Ward	1	West London	3	Aug	77
3:26.2	* Sharon Harvey	2	West London	3	Aug	77

2 performances by 2 athletes to 3:30.0

Women's 1,500m

4:10.7mx	Sonya Bowyer	1mx	Stretford	16	Jul	96
	4:17.4	3	Wythenshawe	30	Jul	96
4:12.8mx	Angela Davies	1mx	Watford	9	Aug	95
	4:15.1	3	Wythenshawe	18	May	94
	4:17.1	2	Wythenshawe	30	Jul	96
4:13.6	Lynne Robinson	1	Cheltenham	20	Jul	94
4:13.8	* Carole Bradford	1	Ipswich	19	Jun	85
	4:18.7	4	Stretford	15	May	84
4:14.1	Julie-Ann Laughton	1	Stretford	25	Jun	85
	4:19.3q	*1*	*Stretford*	*18*	*Aug*	*81*
4:14.3	* Angela Tooby	2	Ipswich	19	Jun	85
4:14.6	Bev Hartigan	1	Wythenshawe	18	May	94
	4:20.0J	1	Stretford	5	Aug	86
4:14.62	* Alison Wyeth	1	Crawley	28	May	94
4:14.80	Sonia McGeorge	2	Crawley	28	May	94
4:14.9	Lynn Gibson	2	Wythenshawe	18	May	94
	4:15.8	1	Wythenshawe	30	Jul	96
	4:16.4	2	Wythenshawe	15	May	96
	(10)					
4:15.2q	** Janet Marlow*	*1*	*Stretford*	*14*	*Jul*	*79*
4:15.3	* Nnenna Lynch USA	1	Wythenshawe	15	May	96
	4:19.3mx	1mx	Ealing	23	Aug	95
4:15.4	* Wendy Wright	2	Stretford	25	Jun	85
4:15.7	Nicky Morris	1	West London	7	Sep	88
4:16.3	Susan Tooby	1	Stretford	15	May	84
	4:18.6	3	Ipswich	19	Jun	85
4:16.4J	* Julie Holland	2	Stretford	15	May	84
4:16.50	Debbie Gunning	3	Crawley	28	May	94
	4:17.3	4	Wythenshawe	18	May	94
	4:17.4	4	Wythenshawe	30	Jul	96
4:16.9	* Hayley Parry	3	Wythenshawe	15	May	96
	4:17.9	5	Wythenshawe	30	Jul	96
4:16.90	Michelle Faherty	4	Crawley	28	May	94
4:17.0q	*Kathryn Carter*	*1*	*Stretford*	*19*	*Jul*	*87*
	4:17.6	1	Stretford	9	Aug	83
	4:18.0q	*1*	*Stretford*	*4*	*Aug*	*81*
	(20)					
4:17.0	Louise McGrillen IRE	3	Stretford	15	May	84
4:17.4q	** Diane Modahl*	*1*	*Stretford*	*19*	*Apr*	*86*
	4:18.7q	*1*	*Stretford*	*11*	*Apr*	*87*
4:17.4mx	Sue Parker	2mx	Stretford	16	Jul	96
4:18.2q	*Julie Asgill*	*1*	*Stretford*	*20*	*Jun*	*81*
4:18.3+	* Mia Gommers HOL	1+	Leicester	14	Jun	69
4:18.5	* Maxine Newman	5	Wythenshawe	18	May	94
4:18.61	Caroline Slimin	1	Solihull	21	Aug	94
4:18.7	Wendy Sly	1	West London	2	Aug	78
4:19.0	Janet Holt	5	Stretford	15	May	84
4:19.0	Amanda Parkinson	4	Wythenshawe	15	May	96
	4:19.7mx	1mx	Stretford	21	Jun	94
	(30)					
4:19.2	* Alison Wright NZL	1	West London	1	Aug	79
4:19.3	* Wendy Lodge	4	Ipswich	19	Jun	85
4:19.6	Laura Adam	1	West London	6	Sep	89
4:19.8	* Jeina Mitchell	6	Wythenshawe	30	Jul	96

51 performances to 4:20.0 by 34 athletes

Women's Mile

4:36.8	* Mia Gommers HOL	1	Leicester	14	Jun	69
	(World Record)					
4:37.4	Rita Ridley	1	Edinburgh	3	Jul	71
	4:39.5	1	Cardiff	11	Sep	71
	4:42.5	1	Crystal Palace	16	Aug	72
	4:46.0	1	Hendon	4	May	69
	4:47.0	1	Welwyn	7	Jul	68
4:37.7	Kim Lock	1	Hendon	11	Aug	82
	(Welsh Record)					
4:38.0	* Marcella Robertson	1	Scotland	14	Jul	85
4:38.1	* R Odem	1	Stretford	6	Aug	85
4:38.3	* Christine Price	2	Scotland	14	Jul	85
4:38.9	* Andrea Wallace	1	Coventry	5	May	90
4:38.93	Lynn Gibson	1	Barnet Copthall	31	Aug	96
4:39.0	* Jackie Beasley	2	Stretford	6	Aug	85
4:39.44	Michelle Faherty	2	Barnet Copthall	31	Aug	96

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

	4:44.6R	1re3	Oxford	10	Jul	93
	(10)					
4:39.90	Sonya Bowyer	3	Barnet Copthall	31	Aug	96
4:40.74	* M Aboulahcen BEL	4	Barnet Copthall	31	Aug	96
4:40.93	Liz Francis-Thomas	5	Barnet Copthall	31	Aug	96
4:41.2	* Alison Jenkins	3	Stretford	6	Aug	85
4:41.20	Joanne Pavey	6	Barnet Copthall	31	Aug	96
	4:46.7	1	Bristol	12	Sep	90
4:41.4	Karen Hargrave	1	Swindon	16	Jul	88
4:41.8	* Carole Bradford	2	Hendon	11	Aug	82
4:42.1	Melissa Watson	2	Swindon	16	Jul	88
	4:44.1	1	Bristol	10	Sep	86
	4:46.3	1	Bristol	16	Sep	87
4:42.43	Beatrice Roh GER	7	Barnet Copthall	31	Aug	96
4:42.5	* Jo Dering	1	Bristol	13	Sep	89
	(20)					
4:42.6	Lynne Harvey	3	Hendon	11	Aug	82
	4:46.8	2	West London	7	Jul	76
4:43.2	* Andrea Everett	3	Scotland	14	Jul	85
4:44.5	* Susan Tooby	2	Bristol	10	Sep	86
4:44.79	Sarah Salmon	8	Barnet Copthall	31	Aug	96
4:45.1	* Angela Mason	1	West London	5	Jul	78
4:45.1	Julie-Ann Laughton	1	Stretford	7	Aug	84
4:45.5	* Carol Gould	2	West London	5	Jul	78
4:45.8	* Betty Green	3	West London	5	Jul	78
4:45.9	* Susan Crawford	3	Scotland	14	Jul	85
4:46.2	* Helen Fielon	4	West London	5	Jul	78
	(30)					
4:46.4	* Angela Lovell	2	Edinburgh	3	Jul	71
4:46.4	Glynis Penny	1	West London	7	Jul	76
4:46.6	* Hayley Nash	3	Swindon	16	Jul	88
4:46.7	* Sue Crehan	2	Stretford	7	Aug	84
	4:47.0	4	Stretford	6	Aug	85
4:46.71	Sarah Bull	9	Barnet Copthall	31	Aug	96
4:47.0	* Gillian Tivey	2	Cardiff	11	Sep	71
4:47.3	* Iris Lincoln	2	Welwyn	7	Jul	68
4:47.4R	Debbie Gunning	1re4	Oxford	10	Jul	93
4:47.5	Laura Adam	4	Swindon	16	Jul	88
4:47.6	* Jean Lochhead	2	Crystal Palace	16	Aug	72
	(40)					
4:48.1	* Karen McLeod	5	Swindon	16	Jul	88
4:48.7	Lisa Webb	1	West London	2	Sep	87
4:48.5	* Elaine Foster	2	Bristol	12	Sep	90
4:48.6	* Rhona McKay	6	Swindon	16	Jul	88
4:48.8R	Wendy Williams	1re2	Oxford	10	Jul	93
4:49.1	Thelwyn Bateman	2	Leicester	14	Jun	69
4:49.4	* Christine Haskett	3	Edinburgh	3	Jul	71

56 performances to 4:50.0 by 47 athletes

Women's 2,000m

6:22.2	Paula Yeoman	1	Crystal Palace	20	Oct	71

1 performance to 6:25.0 by 1 athlete

Women's 3,000m

9:06.2mx	* S Delahunty IRE	1mx	Stretford	1	Aug	95
9:10.9mx	Sarah Bentley	1mx	Stretford	27	Jun	95
	9:21.0mx	1mx	Stretford	30	Apr	96
	9:23.4mx	1mx	Stretford	25	Jun	96
	9:25.93mx	1	Solihull	21	Aug	94
9:11.2mx	* Rhona Makepeace	1mx	Watford	31	Jul	96
9:14.7	* Sharon Harvey	1	West London	1	Sep	82
	9:29.0	2	West London	3	Sep	80
9:16.9mx	* Andrea Whitcombe	1mx	Watford	9	Aug	95
9:17.19	Bev Hartigan	1	Loughborough	11	Jun	95
9:18.1mx	* Louise Watson	2mx	Watford	9	Aug	95
	9:25.90	2	Loughborough	11	Jun	95
	9:29.5mx	2mx	Watford	5	Jun	96
9:18.5	* Nnenna Lynch USA	1	Millfield	8	May	95
9:19.0mx	* Alison Wyeth	1mx	Watford	5	Jun	96
9:19.1	* Melissa Watson	1	Swindon	14	Sep	86
	(10)					
9:19.8mx	* Edwige Pitel FRA	1mx	Watford	10	Jul	96
9:21.9	* Deansie Phillips	1	West London	3	Sep	80
9:22.3	* Alison Barnes	1	Cheltenham	21	Jul	93
9:25.5	* Lesley Morton NZ	1	Yate	18	Jul	90
9:26.4J	Jo White	1	West London	7	Dec	77
9:26.4	* Sarah Ing	2	Swindon	14	Sep	86
9:26.6	* Lynne Harvey	1	West London	6	Sep	78
9:27.2	* Angela Mason	1	West London	7	Jun	78
	9:29.8	1	West London	6	Mar	79
9:29.6	* Penny Yule	2	West London	7	Dec	77
9:29.95	* Jill Hunter	3	Loughborough	11	Jun	95

27 performances to 9:30.0 by 20 athletes

Women's 5,000m

15:47.9	* Andrea Wallace	1	Crystal Palace	25	Apr	90
15:52.4	* Lesley Morton NZ	1	Cheltenham	21	Jul	93
15:58.7	* Suzanne Rigg	1	Stretford	14	Aug	94
16:05.6	Laura Adam	2	Crystal Palace	25	Apr	90
16:06.2	Vicky McPherson	1mx	Loughborough	1	Jun	96
16:12.1	Jayne Spark	2	Stretford	14	Aug	94
16:13.43	* Jo Thompson	1	Crawley	28	May	94
16:25.2	* Lucy Martin	3	Crystal Palace	25	Apr	90
16:25.4	Ceri Pritchard	1	Tooting	10	Sep	89
16:25.7	* Angie Hulley	1	Stretford	29	May	94
	(10)					
16:28.0	* Nnenna Lynch USA	1mx	Stretford	16	May	95

11 performances to 16:30.0 by 11 athletes

Women's 10,000m

35:00.4	* Mary Donoghue IRE	1	Coventry	5	May	90
35:22.8	Ceri Pritchard	2	Coventry	5	May	90
35:45.5	* Jo Thompson	3	Coventry	5	May	90

3 performances to 36:00.0 by 3 athletes

Women's 4 x 800m Relay

8:39.6	BMC Junior Squad	1	Watford	17	Jul	96
	(World Junior Record)					
8:41.1	BMC National Squad	2	Watford	17	Jul	96

2 performances to 8:50.0

Women's 3 x 1,500m Relay

13:38.0	Southern BMC	1	Crystal Palace	20	Aug	69
	(World Record)					
13:44.2	Northern BMC	2	Crystal Palace	20	Aug	69
13:47.0	Scottish BMC	1	Harlow	4	Jul	70
13:47.6	English BMC	2	Harlow	4	Jul	70
13:48.7+	BMC National Squad	1	Stretford	30	Apr	96

5 performances to 14:00.0

Additional Age Group

14:08.8+	BMC Junior Squad	2	Stretford	30	Apr	96

Women's 4 x 1,500m Relay

18:12.1	BMC National Squad	1	Stretford	30	Apr	96
	(British and Commonwealth Record)					

1 performance to 19:00.0

Additional Age Group

19:06.7	BMC Junior Squad	2	Stretford	30	Apr	96
	(British and European Junior Record)					

Women's 4 x 1 Mile Relay

19:17.3	BMC National Squad	1	Oxford	10	Jul	93
	(World Record)					
20:07.5	BMC Midlands	2	Oxford	10	Jul	93
20:08.3	BMC North	3	Oxford	10	Jul	93
20:22.9	BMC South West	4	Oxford	10	Jul	93

4 performances to 20:30.0

All-Time BMC Rankings

Performances set in BMC races - compiled by Matthew Fraser Moat

All-Time BMC Male Athletes

Most Elite Performances: 12 Andy Hart (+4 relays), 9 Ian Gillespie (+2 relays), 8 Neil Caddy (+3 relays), 7 Lee Cadwallader (+2 relays), 6 Andy Knight (+1 relay), Justin Swift-Smith (+1 relay), 5 Ian Grime, Tim Hutchings, Walter Wilkinson, 4 Richard Ashe, Adam Duke, Robert Hough, Steve Ovett, 3 Eddy King (+1 relay), John Lisiewicz, Rupert Waters (+1 relay), Rob Whalley.
By Non-members: 6 *Matt Hibberd, 5 *Kevin McKay, 4 *Steve Green, *Neil Horsfield, *Dave Lewis, *Gary Lough, 3 *Jason Lobo, *Craig Winrow.

All-Time BMC Female Athletes

Most Elite Performances: 6 Lynn Gibson, 5 Michelle Faherty (+3 relays), Sonya Bowyer, Rita Ridley, 4 Sarah Bentley, Angela Davies, Debbie Gunning (+1 relay), Bev Hartigan, Melissa Watson, 3 Laura Adam, Ann Griffiths, Julie-Ann Laughton.
By Non-members: 4 *Diane Modahl, *Nnenna Lynch, 3 *Shireen Bailey, *Janet Bell, *Jane Finch, *Lynne Harvey, *Sharon Harvey, *Vicki Lawrence, *Louise Watson.

British Milers' Club Records

as at 19th April 1997

	BMC Member's Record *by a paid-up BMC member in a BMC race*	**BMC All-Time Record** *by anyone in a BMC race*	**BMC Club Record** *by a paid-up BMC member in any race*
Men			
M600	1:18.5 Steve Ovett 1976 1:18.5 Andy Knight 1996	1:18.5 Steve Ovett 1976 1:18.5 Andy Knight 1996	1:15.0+ Seb Coe 1981
M800	1:47.7 Seb Coe 1976 1:47.7 Robin Hooton 1996	1:46.4 Paul McMullen USA 1995	1:41.73 Seb Coe 1981
M1000	2:22.0 Richard Lynch 1992	2:21.7 Kevin McKay 1996	2:12.18 Seb Coe 1981
M1500	3:39.1 Neil Caddy 1996	3:39.0 David Lewis 1983	3:29.77 Seb Coe 1986
M Mile	3:56.35 Anthony Whiteman 1996	3:56.35 Anthony Whiteman 1996	3:47.33 Seb Coe 1981
M2000	5:11.0 Walter Wilkinson 1972	5:11.0 Walter Wilkinson 1972	4:53.06 Jack Buckner 1987
M3000	7:52.6 Rob Whalley 1996	7:52.6 Rob Whalley 1996	7:32.79 David Moorcroft 1982
M 2 Mile	8:44.6 Alan Blinston 1970	8:44.6 Alan Blinston 1970	8:13.51 Steve Ovett 1978
M5000	13:56.6 Ian Gillespie 1996	13:46.4 John Sherban 1994	13:00.41 David Moorcroft 1982
Women			
W600	1:29.4 Linda Staines 1997	1:29.4 Linda Staines 1997	1:26.5 Kirsty Wade 1985
W800	2:03.0 Kirsty Wade 1982	2:00.7 Shireen Bailey 1985	1:57.42 Kirsty Wade 1985
W1000	2:44.9 Jo White 1980	2:44.9 Jo White 1980	2:33.70 Kirsty Wade 1985
W1500	4:10.7mx Sonya Bowyer 1996	4:10.7mx Sonya Bowyer 1996	4:00.73 Kirsty Wade 1987
W Mile	4:37.4 Rita Ridley 1971	4:36.8 Mia Gommers HOL 1969	4:19.41 Kirsty Wade 1985
W2000	6:22.2 Paula Yeoman 1971	6:22.2 Paula Yeoman 1971	5:37.00 Christine Benning 1984
W3000	9:10.9mx Sarah Bentley 1995	9:06.2mx Sinead Delahunty IRE 1995	8:37.06 Wendy Sly 1983
W5000	16:05.6 Laura Adam 1990	15:47.9 Andrea Wallace 1990	15:21.45 Wendy Sly 1987

Muscular Endurance

by Peter Thompson

The Role and Development of Muscular Endurance for Middle Distance Athletes

Introduction

When we watch a men's or a women's middle distance event, the drama inevitably unfolds in the last third of the race. It is during this period that there are many positional changes as athletes strive to place themselves in the best possible position to cross the finish line. Even in those cases where a runner makes a tactical decision early on in a race to commit to the lead, with or without the aid of pace makers, the question in spectators' and other competitors' minds is: "Can this athlete maintain this lead position?" But what determines the athlete's relative success or failure in this final third of the race? Obviously, since we are talking about the last third of a race, there is a time factor here and we are considering how athletes perform over a duration of time. In the past, this ability to maintain or increase speed in the last part of a race was referred to as stamina. Now more and more people recognise and use the term 'endurance'.

If you listen to athletes and coaches talking about things 'athletic' the word 'endurance' crops up many times in the conversation but usually attached to something else. We hear terms like: 'Speed Endurance', 'Strength Endurance', 'Aerobic Endurance', 'Anaerobic Endurance', 'Neuromuscular Endurance', 'General Endurance', 'Specific Endurance', 'Event Specific Endurance' and so on. What I would like to invite you to do is examine and understand:

- what is meant specifically by the terms 'endurance' and 'muscular endurance'
- what comprises the various components of muscular endurance
- what are the contributing and limiting factors which affect performance in these areas and
- what are the optimal ways in which to develop the necessary balanced muscular endurance to contribute to raising performance levels.

From such an examination, the role and importance of muscular endurance in the middle distance events should become self apparent.

What do we mean by Endurance?

If we want to look for the meaning of a word or phrase the first reference book to turn to is the Dictionary. In **The Oxford Modern English Dictionary** 'endurance' is defined as: "the ability to withstand prolonged strain.". But in our sport of Track & Field Athletics we find events of varying duration, with the majority being of short duration. This dictionary definition does not satisfy our needs because it includes the word 'prolonged'. Is endurance not a factor then in the 100m, Long Jump or Discus? Of course it is, but it is a different type of endurance than that required by a 1500m runner or marathoner. What we need in athletics is a functional definition of endurance, where endurance is viewed relative to its event context, such as: **"Endurance - the ability to maintain an activity at the optimal intensity for the required duration of that activity".**

Having defined endurance in a functional manner relative to athletics, we now need to move onto considering muscular actions and see how they relate to endurance for middle distance athletes. In a purely pragmatic sense, we can say that all endurance comes down to muscular endurance because it is the actions of muscles that control and provide motion. But this is a simplistic view and first we should understand more about how muscles contract.

What Happens when a Muscle Contracts

When we say "muscular contraction" it is very easy to think only of a muscle shortening and becoming thicker. Muscular contractions can, however, be of various types but they all have as a common point that they act to exert a pulling force on a bone. A classification of muscular contractions generally recognises two major types of contraction:

- **Static Contractions**: During static or, as they are more commonly referred to, isometric contractions there is no change in muscle length, although the muscle is exerting force. Both ends of the muscle are fixed and there is no joint movement.
- **Dynamic Contractions**: When a contraction results in a change in muscle length and causes movement at a joint or joints this is called a dynamic contraction. Tension is produced to overcome or resist a specific loading and there is a change in muscle length.

Static or Isometric Contractions and the Middle Distance Athlete

Common examples which are used to illustrate isometric contractions are when an individual tries to move an immovable object, or when a position is held, such as the "set" position in the crouch start. But isometric contractions have a fundamental role to play in **all** postural control of the body and this is all too often a neglected area of the athlete's physical preparation. The concept of 'core', 'pillar' or 'stabilisation' strength is now recognised as a very important and necessary strength both as a foundation for later dynamic muscular development, and to permit the expression of optimum force though the propulsive limbs to the ground. Without this core strength there is greater risk of lower back injury from weight training and, when running, energy is lost through the twisting of the abdominal region, which absorbs and wastes energy.

If muscular endurance is lacking in the necessary isometric core strength the consequence will be, as a race progresses, a loss of stabilisation with increasing wastage of energy, as this is absorbed in the increased twisting, torsional movements of the abdomen. If we expect to raise our pace and 'kick' over the last stages of the race, as we do in 1500m and longer races, we find that at the same time as we are trying to transmit large forces to the track to accelerate our body, any torsional instability of the trunk will absorb an increasing amount of this energy and reduce the force to the track.

A lack of muscular endurance in the necessary isometric core strength does not, however, just lead to an absorption and wastage of energy. Probably a greater cause of poor performance is the loss of postural control of the pelvic area. If the pelvis is not held isometrically in a neutral position as we run it will tend to rotate so that the lower back becomes 'swayed'. Of more disastrous consequence is the fact that this pelvic tilt causes changes to the lower limbs as the bones act as a system of connected levers. The pelvic tilt results in an internal rotation of the femur, internal rotation of the tibia with, finally, a lowering of the longitudinal arch of the foot. In simple terms, it makes you flat footed causing an increasingly slow sinking each time the foot contacts the ground. Now, instead of the foot landing like a pre-tensed spring and giving a short, explosive ground contact it is working against the sprint action we are striving to achieve.

Developing Isometric Muscular Endurance

To develop isometric strength we must apply

Muscular Endurance

by Peter Thompson

the principles of the Law of Specificity. This states that "the adaptation response to any training stimulus is specific to the nature of that stimulus". Therefore, to develop isometric strength and endurance we must train isometrically. It has been quite clearly shown by researchers that isometric training improves isometric strength but has little impact on dynamic strength and vice versa. To develop the endurance element of isometric contractions we must continue to apply the specificity principle and follow a regime of increasing duration utilising isometric stabilisation exercises, some examples of which are illustrated in the accompanying photographs.

Each exercise should initially be held in the technically correct position for 5 - 10 seconds, for 5 - 7 repetitions. As isometric strength and endurance develops in the musculature involved in stabilising the trunk it will become easier to hold the desired position, and both the duration for 'holding' the exercise and the number of repetitions can be increased. It will take several months to develop a good foundation of isometric muscular endurance.

Once a foundation of isometric muscular endurance has been achieved it is possible to progress to performing the exercises in a more dynamic manner. The isometric aspect is emphasised by moving from the starting position to the finish position in a controlled manner, and holding the finish position for a moment before returning with a controlled lowering to the start position. Eventually, these stabilisation exercises can be incorporated into a circuit or form a specific circuit on their own. As with any exercise, only correct form is acceptable as practice alone does not make perfect but, "perfect practice, makes perfect and permanent"

Dynamic Contractions and the Middle Distance Athlete

Dynamic contractions, where observable bodily movement occurs, may be further subdivided into two major types:

- **Isotonic Contractions**: When a contraction results in a natural change in muscle length and causes movement at a joint or joints this is called an isotonic dynamic contraction. Tension is produced to overcome or resist a specific loading and there is a change in muscle length.
- **Isokinetic Contractions**: These are similar to isotonic contractions, only the muscle shortens at a constant speed throughout its full range of motion. The force the muscle exerts changes through the range of motion as it works against a non-acceleratable resistance. These contractions can only occur using special equipment such as a Cybex machine and are very useful in muscle re-education, particularly in rehabilitation from injury but will not be considered further here since they are not produced in natural activities, such as running.

Isotonic Dynamic Contractions

These are what most people think of when they think of muscular contractions, since they result in readily observable external motion of the body. When the contraction force is greater than the load to be overcome, the dynamic contraction results in a shortening and a thickening of the muscle. This is referred to as a **concentric contraction.** If the contraction force is slightly less than the load to be lifted then the dynamic contraction results in a lengthening of the muscle while it is still exerting force. This is known as an **eccentric contraction**.

The Development of Isotonic Muscular Endurance

Most definitions of isotonic muscular endurance refer to it as 'strength endurance' and recommend its development through utilising loadings of 50% to 75% of maximum, with a high number of repetitions (10 - 30+). Again, most coaches are really talking about concentric contractions when they refer to strength endurance but muscular endurance needs to be developed using eccentric contractions, in addition to concentric exercises. To consider the importance of eccentric work, in particular, we have to understand more about what happens inside the muscle when it contracts.

What Happens when a Muscle Contracts - The Inside Story

In simple terms, muscles are made up of protein filaments which slide over one another or, in the case of static contractions, try to slide over each other to produce a pulling force. This is the **contractile** component of muscular contractions. But there is another element which contributes in varying degrees to muscular contraction and this is the **elastic** component. The sheathes of fascia which surround the bundles of muscle fibres and surround the muscle itself come together at the end of each muscle to form tendons which connect the muscle firmly to bones. This connective tissue has tremendous elastic properties, and responds to training in the same way as other tissues of the body do, by adapting to appropriate stresses of training.

When we consider the development of muscular endurance for middle distance athletes we must consider the development of both the contractile component and the elastic component. When we were considering isometric contractions earlier, we saw that a lack of postural control of the pelvis is not a positive factor and can result in a flat footed gait. The importance of this knowledge lies in the fact that to be in a position to use the powerful elastic component of muscular contraction to best advantage, a muscle must be pre-stretched, or subject to pre-tension. If you are flat footed, there is little opportunity to use the elastic strength and properties of the lower leg musculature.

Apart from the ability to provide explosive force, another benefit of the use of elastic muscular endurance is that it requires little energy to produce the contraction, it is in effect an energy efficient option to producing powerful actions. This is why Kangaroos are such efficient animals, as they increasingly use the elastic component of contraction and less energy as speed increases. In this way, they can easily cover vast distances at a considerable pace. For the human animal, we find that towards the end of a race, as energy levels reduce and metabolites build up to inhibit the contractile component of muscular contractions, the role of the elastic component becomes more important since it can potentially still operate under these conditions - provided it has been developed. Muscular endurance in this elastic area can be developed through exercises such as hopping and bounding, particularly when technique is emphasised to ensure each foot contact is 'active', with a pre-tensed calf muscle.

In a recent article about the benefits of Cross Country training and racing it stated: "...each time one of your feet descends into a less than solid patch of ground, your foot, ankle, and calf muscles have to work overtime to extract you from it. This builds tremendous strength in the lower reaches of blaze your way to new PBs on your old courses.". Now this may have benefits for cross country performance but does it develop the elastic strength and endurance necessary for high level middle distance performance? It certainly does develop a good foundation of contractile strength endurance and this is always a solid general preparation for more specific elastic work later.

Figure 1 summarises those particular

Muscular Endurance

by Peter Thompson

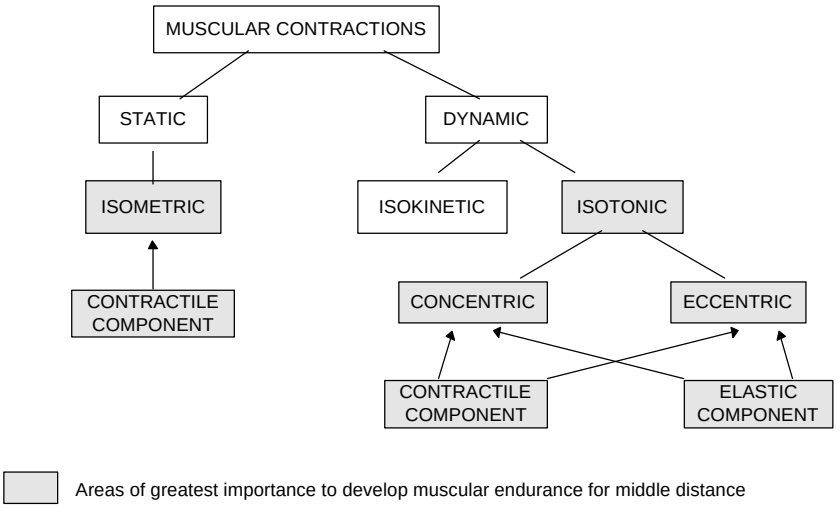


Figure 1: Summary of the Types of Muscular Contractions

areas which should be developed for the middle distance athlete.

The Energy for Muscular Contractions

We have considered now the way in which muscles contract and seen that there are two components of the muscle contraction which contribute to force production, the contractile and the elastic. We have also mentioned that the contractile component, and to a much lesser extent the elastic component, is dependant upon energy provided within the muscles to produce the contractions. The availability of this energy in the form of ATP is one of the key determinants as to how intense and for how long a muscle can contract - i.e. its muscular endurance.

Endurance performance is ultimately limited by the availability of energy and also by the build up of metabolites of energy production in the form of Hydrogen ions. There is a commonly held view by coaches and athletes that lactic acid causes fatigue - this is not the case. Lactic acid dissociates rapidly in the muscle into hydrogen ions and the salt, lactate. The lactate has various pathways it can follow and most of these help to contribute additional energy either in the muscle directly, in the cardiac muscle or by conversion to glycogen in the liver. Rather than limiting performance, lactate can actually contribute to energy production and hence, endurance, through the process previously described which has come to be known as the 'Lactate Shuttle'.

Developing the Endurance Capacity of the Energy Systems

Traditional methods to improve endurance capacities utilise training which is designed to:

- Raise VO_2 max
- Improve efficiency by raising the lactate threshold
- Develop a high economy of effort

To specifically train lactate shuttle abilities, middle distance athletes should occasionally train either side of their lactate threshold or OBLA (Onset of Blood Lactate Accumulation). This causes the body to accumulate lactate on the faster periods and then to utilise and dissipate this lactate in the slightly slower than OBLA periods. This training process will lead to improvements in the energy systems' ability to 'shuttle' lactate more effectively. In fact, varying the intensities of your running at all levels of effort should enhance the body's ability in this area.

The Role of the Nervous System in Muscular Endurance

Muscles pull when they receive electrical impulses from the brain telling them to do so. This interactive role of the nervous system with the musculature places it, like energy production, in a position to be both a contributing and a limiting factor to endurance. If a skill is poorly practised it is much more likely that the higher centres of the brain will need to be involved to maintain the execution of the skill. This requires a mental concentration which is liable to fatigue. The skilled athlete can merely concentrating on the "doing" of the event through the execution of a well rehearsed motor programme rather than an unnecessary concentration on the "How am I going to do ……?" and "What am I doing?"

Most researchers agree that central nervous system fatigue may take place but the muscle retains the capacity to contract, since it can be stimulated into action externally and from lower nervous centres. Failure of a muscle fibre's contractile mechanism is more likely to be related to the energy systems and due to an accumulation of Hydrogen ions causing an interference to the role of calcium in the muscular contractions.

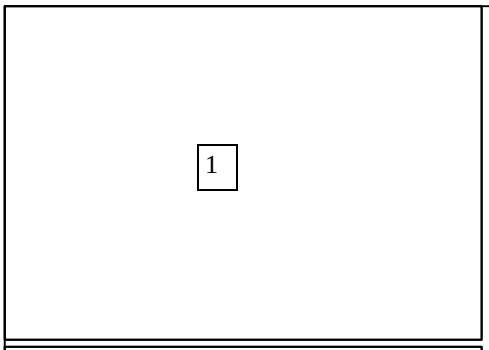
Finally, motivation is a mental aspect of performance and cannot be ignored. No consideration of muscular endurance can be complete without consideration of the levels of motivation that an individual develops. This motivation can be developed and is at its highest and most stable when the motivation is intrinsic - that is arising from sources within the athlete.

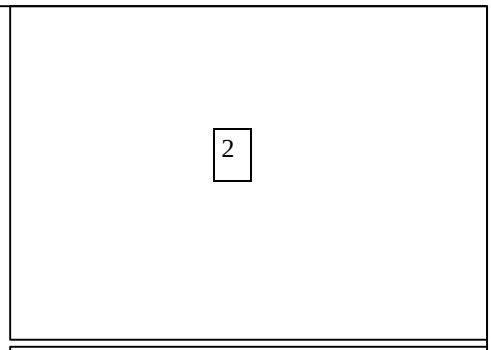
In this article we have looked at the role, importance and development of the components of muscular endurance for the middle distance athlete. The ability to continue to exert appropriate optimum muscular force is a key determinant of performance. You should become familiar with what contributes to and what limits your performance. With this knowledge, examine your own preparation to ensure that you are addressing all the component areas of muscular endurance development, your weaknesses as well as your strengths, and make changes if they are needed.

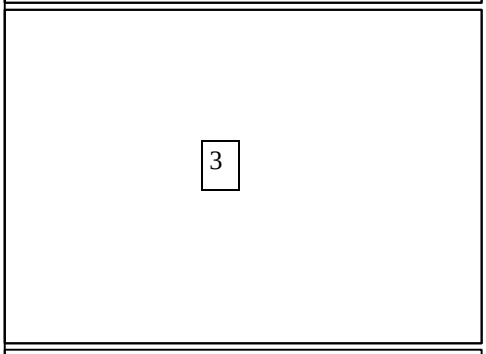
Muscular Endurace

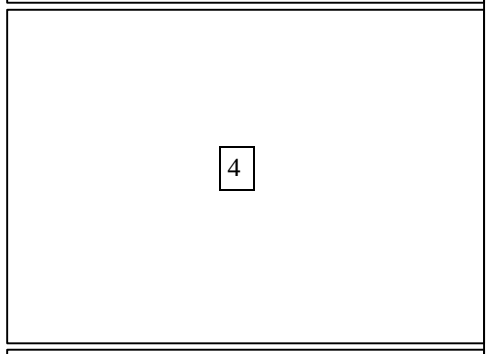
by Peter Thompson

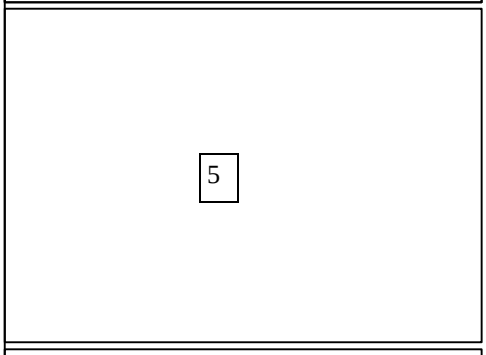
Isometric Stabilisation Exercises

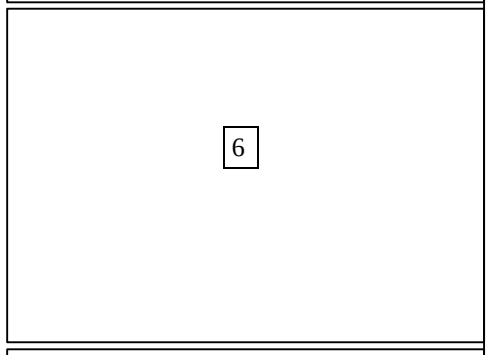


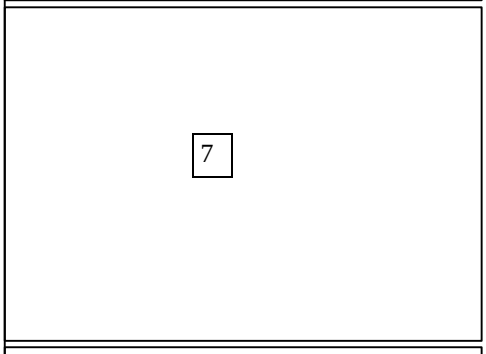


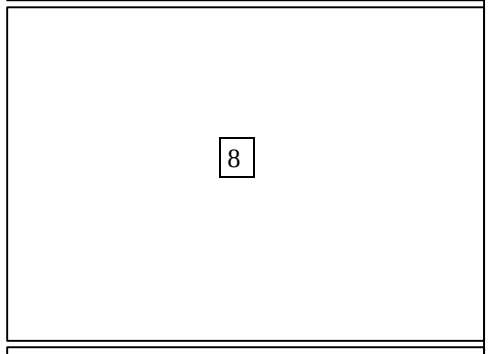


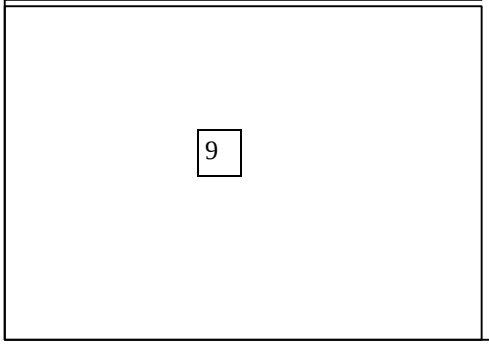


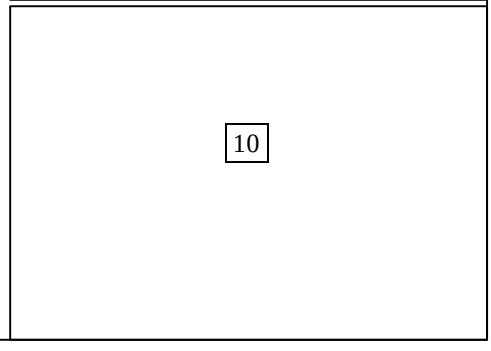


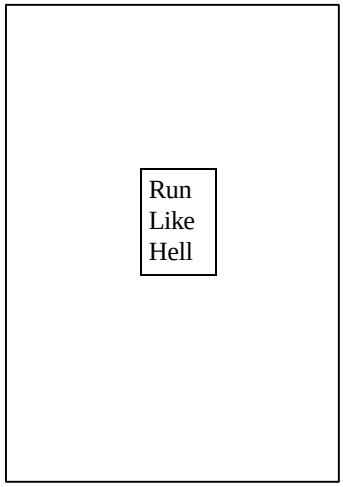












INSTRUCTIONS

Each exercise should initially be held in the technically correct position for 5 - 10 seconds, for 5 - 7 repetitions. As isometric strength and endurance develops in the musculature involved in stabilising the trunk it will become easier to hold the desired position, and both the duration for 'holding' the exercise and the number of repetitions can be increased. It will take several months to develop a good foundation of isometric muscular endurance.

UK Relay Rankings

Men's 4 x 800m

Seniors

W E C A N	7:03.89	UK National Team	30th Aug 1982
WJ, EJ, NJ	7:26.2	BMC Junior Squad	2nd Sep 1995
WV	8:00.2	West Valley TC, USA	7th July 1984
EV, NV	8:07.1	Vets AC	17th July 1996
England	7:03.89	UK National Team	30th Aug 1982
Scotland	7:29.2*	National Team	9th Aug 1961
Wales	7:32.0	BMC Wales	2nd Sept 1995
Northern Ireland	7:38.6	Annadale Striders	4th June 1986
UK Club	7:24.4*	North Staffs & Stone	27th Jun 1965

Juniors

WJ, EJ, NJ	7:26.2	British Milers' Club	2nd Sept 1995
England	7:26.2	British Milers' Club	2nd Sept 1995
Wales	7:47.9	BMC Wales	2nd Sept 1995
Scotland		not known	
Northern Ireland	7:44.2	Annadale Striders	May 1989
UK Club	7:35.3	Liverpool H	14th Aug 1990

Veterans

World	8:00.2	West Valley TC, USA	7th July 1984
European	8:07.1	Vets AC	17th July 1996
National	8:07.1	Vets AC	17th July 1996
England	8:52.4	Herne Hill Harriers	3rd June 1979
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club	8:52.4	Herne Hill Harriers	3rd June 1979

All Time British Lists

7:03.89	UK National Team	1	Crystal Palace	30 Aug	82
7:11.62	UK 'B'	2	Crystal Palace	30 Aug	82
7:11.8y	UK National Team	1	Crystal Palace	22 Jun	66
7:12.2	UK National Team	2	Sheffield	5 Jun	92
7:12.66	UK National Team	3	Portsmouth	5 Jun	93
7:14.6y	UK National Team	2	Crystal Palace	5 Sep	70
7:17.6y	UK National Team		White City	28 Aug	67
7:18.6	IAC	1	Crystal Palace	15 Sep	72
7:19.45	England	1	Crystal Palace	18 Aug	79
7:23.1	BMC National Squad (10)	1	Watford	17 Jul	96
7:23.6	UK National Team	4	Paris	2 Oct	71
7:23.9y	Murray State University	2	Knoxville	15 Apr	78
7:24.4y	North Staffs & Stone		Sale	27 Jul	65
7:25.6y	Sale Harriers	1	Wolverhampton	10 Aug	68
7:26.2	BMC Junior Squad U20	1r1	Oxford	2 Sep	95
7:26.2	Sale Harriers	2r1	Oxford	2 Sep	95
7:26.4	Sale Harriers	1	Crystal Palace	9 Aug	69
7:26.8y	Mitcham AC	1	Birmingham	16 Sep	67
7:27.0y	Brighton & Hove AC	2	Wolverhampton	10 Aug	68
7:27.6y	North Staffs & Stone (20)	1	London HU	28 Aug	65
7:27.6y	Birchfield Harriers	2	London HU	28 Aug	65
7:27.6y	North Staffs & Stone	2	Birmingham	16 Sep	67

Women's 4 x 800m

Seniors

World & European	7:50.17	U S S R	5th Aug 1984
All-Comers	7:57.08	Russia	5th Jun 1993
Commonwealth	8:20.73	UK National Team	5th Jun 1993
National	8:19.9	UK National Team	5th Jun 1992
WJ, EJ, NJ	8:39.6	BMC Junior Squad	17th Jul 1996
WV, EV	9:37.29	Holland	25th Sept 1992
NV		not known	
England	8:20.73	UK National Team	5th Jun 1993
Scotland	8:44.4	Scottish WAAA	21st Aug 1971
Wales		not known	
Northern Ireland		not known	
UK Club	8:41.0	Cambridge H	26th May 1975

Juniors

WJ, EJ, NJ	8:39.6	British Milers' Club	17th Jul 1996
England	8:39.6	British Milers' Club	17th Jul 1996
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club	8:53.1	Havering AC	24th May 1980

Veterans

World	9:37.29	Holland	25th Sept 1992
European	9:37.29	Holland	25th Sept 1992
National		not known	
England		not known	
Scotland		not known	
Northern Ireland		not known	
Wales		not known	
UK Club		not known	

All Time British Lists

8:19.9	UK National Team	3	Sheffield	5 Jun	92
8:20.73	UK National Team	6	Portsmouth	5 Jun	93
8:23.8	UK National Team	1	Paris	2 Oct	71
8:25.0	UK National Team	1	Crystal Palace	5 Sep	70
8:27.0	UK National Team	1	Edinburgh	13 Jun	70
8:35.2	UK National Team	1	Leicester	28 May	72
8:39.2	WAAA	1	Edinburgh	21 Aug	71
8:39.6	BMC Junior Squad	1	Watford	17 Jul	96
8:40.5	UK 'B'	2	Edinburgh	13 Jun	70
8:41.0	Cambridge Harriers (10)	1	Crystal Palace	26 May	75
8:41.1	BMC National Squad	2	Watford	17 Jul	96
8:42.8	UK 'B'	2	Crystal Palace	5 Sep	70
8:44.4	Scottish WAAA	2	Edinburgh	21 Aug	71
8:44.6	Cambridge Harriers	1	Hendon	14 Jul	73
8:45.26	Birchfield Harriers	1	Birmingham	16 Jun	79
8:47.2	UK 'B'	2	Leicester	28 May	72
8:48.8	UK 'C'	3	Leicester	28 May	72
8:49.8	Barnet & District	2	Birmingham	3 Jul	71
8:49.91	Sale Harriers	1	Birmingham	8 Aug	81
8:50.3	Sale Harriers (20)	1	Birmingham	24 May	80

UK Relay Rankings

Men's 4 x 1,500m

Seniors

World & European	14:38.8	West Germany	17th Aug 1977
Commonwealth	14:40.4	New Zealand	22nd Aug 1973
All-Comers	15:04.7	Italy	5th Jun 1992
National	14:56.8#	UK National Team	23rd Jun 1979
	15:04.6	UK National Team	5th May 1976
WJ, EJ, NJ	16:03.2	BMC Junior Squad	30th Apr 1996
WV, EV, NV	17:21.0	BMC Veteran Squad	30th Apr 1996
England	14:56.8#	UK National Team	23rd Jun 1979
	15:04.6	UK National Team	5th May 1976
Scotland	16:08.4	Edinburgh SH	8th Aug 1971
Northern Ireland	15:52.7	Duncairn H	1980
Wales	15:34.6	Cardiff AAC	15th Aug 1970
UK Club	15:12.6	Bristol AC	5th Aug 1975

Juniors

WJ, EJ, NJ	16:03.2	British Milers' Club	30th Apr 1996
England	16:04.3	Blackburn Harriers	15th Sep 1979
Scotland		not known	
Northern Ireland		not known	
Wales	16:27.6	Newport Harriers	4th Sep 1983
UK Club	16:04.3	Blackburn Harriers	15th Sep 1979

Veterans

WV, EV, NV	17:21.0	British Milers' Club	30th Apr 1996
England		not known	
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club		not known	

All Time British Lists

[14:56.8	*UK National Team*	*3*	*Bourges*	*23 Jun 79]*
15:04.6	UK National Team	2	Athens	5 May 76
15:06.6	UK National Team	2	Paris	2 Oct 71
15:06.6	UK National Team	2	Sheffield	5 Jun 92
15:06.8	Murray State University	2	Knoxville	13 Apr 79
15:12.6	Bristol AC	1	Cwmbran	5 Aug 75
15:15.35	Bayer Uerdingen	3	Waidlingen, WG	18 Sep 78
15:23.6	British Milers' Club	1	Crystal Palace	12 Aug 73
15:27.2	England	1	White City	23 Sep 53
15:29.0	UK National Team (10)	1	White City	17 Jul 54
15:32.6	British Milers' Club	1	Stretford	30 Apr 96
15:34.6	Cardiff AAC	1	Bracknell	15 Aug 70
15:37.4	SCAAA	3	Crystal Palace	12 Aug 73
15:40.6	Manchester & DLCH	1	Leicester	26 Sep 70
15:45.4	Cardiff AAC	1	Bracknell	19 Aug 72
15:49.2	Brighton & Hove AC	2	Leicester	26 Sep 70
15:49.6	Achilles	1	Leyton	12 May 53
15:52.6	UK 'C'	2	White City	17 Jul 54
15:52.6	Coventry Godiva H	1	Redditch	27 Jun 70
15:52.7	Duncairn Harriers (20)	1	Antrim	80

Women's 4 x 1,500m

Seniors

World	17:18.10#	Villanova Univ USA/IRE	27th Apr 1990
(W), European	17:22.30	Providence Univ IRE	26th Apr 1991
C, Nat, All	18:12.1	British Milers' Club	30th Apr 1996
WJ	18:52.5	Irvine University	23rd Apr 1982
EJ, NJ	19:06.7	BMC Junior Squad	30th Apr 1996
WV, EV, NV		not known	
England	18:12.1	British Milers' Club	30th Apr 1996
Scotland		not known	
Northern Ireland		not known	
Wales		not known	
UK Club	19:47.90	Darlington H	25th Sep 1983

Juniors

World	18:52.5	Irvine University	23rd Apr 1982
European & Nat	19:06.7	BMC Junior Squad	30th Apr 1996
England		not known	
Scotland		not known	
Northern Ireland		not known	
Wales		not known	
UK Club		not known	

Veterans

World	not known
European	not known
National	not known
England	not known
Scotland	not known
Northern Ireland	not known
Wales	not known
UK Club	not known

All Time British Lists

18:12.1	British Milers' Club	1	Stretford	30 Apr 96
18:16.2	Cambridge & Oxf Univs	9	Philadelphia	27 Apr 90
19:06.7	BMC Junior Squad	2	Stretford	30 Apr 96
19:47.90	Darlington H	1		25 Sep 83

UK Relay Rankings

Men's 4 x 1 Mile

Seniors

World & European	15:49.08	Ireland	17th Aug 1985
Commonwealth	15:59.57	New Zealand	1st Mar 1983
All-Comers	16:21.1	British Milers' Club	10th July 1993
National	16:17.4	Bristol AC	25th Apr 1975
WJ, EJ, NJ	16:56.8	BMC Junior Squad	10th July 1993
WV, EV, NV	18:11.9	BMC Veteran Squad	2nd Sept 1995
England	16:17.4	Bristol AC	25th Apr 1975
Wales	16:59.8	Birchgrove Harriers	28th Aug 1965
Ireland	17:40.0	9th Old Boys	27th May 1967
Scotland	18:07.31	Edinburgh SPCAC	2nd Sept 1989
UK Club	16:17.4	Bristol AC	25th Apr 1975

Juniors

WJ, EJ, NJ	16:56.8	British Milers' Club	10th July 1993
England	16:56.8	British Milers' Club	10th July 1993
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club	17:23.02	Belgrave Harriers	13th June 1982

Veterans

WV, EV, NV	18:11.9	British Milers' Club	2nd Sept 1995
England	18:11.9	British Milers' Club	2nd Sept 1995
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club	18:42.0	Wirral AC	18th July 1980

All Time British Lists

16:17.4	Bristol AC	1	Des Moines	25	Apr	75
16:21.1	British Milers' Club	1	Oxford	10	Jul	93
16:24.52	England	3	Dublin	17	Aug	85
16:24.8	Northern Counties Team	2	Dublin	17	Jul	61
16:25.0	Murray State University	5	Knoxville	14	Apr	78
16:27.2	Western Kentucky Univ			11	Mar	75
16:28.2	NCAAA	1	White City	28	Jun	61
16:28.9	British Milers' Club	1	Oxford	2	Sep	95
16:30.6	England	1	White City	27	Sep	58
16:32.4	UK 'A'	1	White City	20	Sep	61
	(10)					
16:34.7	Murray State University					78
16:35.4	UK 'B'	3	White City	20	Sep	61
16:36.6	UK 'C'	4	White City	20	Sep	61
16:37.1	British Milers' Club	1	Oxford	17	Sep	94
16:41.0	UK National Team	1	White City	1	Aug	53
16:42.0	North		Manchester	21	Aug	62
16:42.8	UK National Team	1	Helsinki	13	Sep	59
16:43.0	Birchfield Harriers	1	Cwmbran	27	Jul	68
16:44.2	British Milers' Club 'A'	1	Billingham	12	Jul	65
16:45.0	SCAAA	2	White City	28	Jun	61
	(20)					
16:46.2	Longwood H & AC	1	Crystal Palace	23	Jul	66

Women's 4 x 1 Mile

Seniors

W E C A N	19:17.3	BMC National Squad	10th July 1993
WJ	20:28.0+	Brighton HS, New York	11th Jun 1985
EJ		not known	
NJ		not known	
WV, EV, NV	21:13.3	BMC Veteran Squad	10th July 1993
UK Club		not known	

Juniors

WJ	20:28.0+	Brighton HS, New York	11th Jun 1985
EJ, NJ		not known	
England		not known	
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club		not known	

Veterans

WV, EV, NV	21:13.3	British Milers' Club	10th July 1993
England	21:13.3	British Milers' Club	10th July 1993
Wales		not known	
Scotland		not known	
Northern Ireland		not known	
UK Club		not known	

All Time British Lists

19:17.3	British Milers' Club	1	Oxford	10	Jul	93
20:07.5	BMC Midlands	2	Oxford	10	Jul	93
20:08.3	BMC North	3	Oxford	10	Jul	93
20:22.9	BMC South West	4	Oxford	10	Jul	93
20:58.9	BMC Devon & Cornwall	5	Oxford	10	Jul	93
21:13.3	BMC National Vets	6	Oxford	10	Jul	93

British Milers' Club - 1997 Fixtures

The British Milers' Club is sponsored by NIKE - all races will be paced and are for members only

BMC / NIKE Grand Prix

Matthew Fraser Moat 01304 379777
Glen Grant 01252 626183

Please register with the meeting organiser 8 days before each meeting

14th May	Wythenshawe	M800, W800
Norman Poole 0161 980 8358		M1500, W1500
3rd Jun	Loughborough	M800, W800
Glen Grant 01252 626183		M1500, W1500
25th Jun	Watford	M800, W800
Ian Chalk 01438 714487		M1500, W1500
7th Aug	Swindon	M800, W800
Glen Grant 01252 626183		M1500, W1500
6th Sep	Bristol (GP Final)	M800, W800
Matthew FM 01304 379777		M Mile, W Mile

Athlete's best 4 out of the 5 meetings count towards the BMC / NIKE Grand Prix.

BA Endurance Initiative Grand Prix

Mike Down 0117 973 3407

Please register 8 days before each meeting

30th Apr	Watford	M10000, W10000
5th May	Millfield	M 2 Miles, W3000
14th May	Wythenshawe	M3000
18th May	Loughborough	M5000
18th May	Stevenage	W5000
25th May	Bedford	M10000
3rd Jun	Loughborough	W10000
25th Jun	Watford	M3000, W3000
7th Aug	Swindon	M3000, W3000
6th Sep	Bristol (GP Final)	M5000, W5000

BMC "Mile of Miles"

Mike Down 0117 973 3407
Ian Chalk 01438 714487

20th Apr	Luton	MW Road Mile
18th May	Stevenage	M Mile, W Mile
15th Jun	Ipswich	M Mile, W Mile
18th Jun	Bath	M Mile, W Mile
9th Jul	Bedford	M Mile, W Mile
29th Jul	Exeter	M Mile, W Mile
7th Sep	Bristol	MW Road Mile

BMC "Record Breakers"

Matthew Fraser Moat 01304 379777
Mike Down 0117 973 3407

19th Apr	Battersea Park	M600, W600
5th May	Millfield	M 2 Miles
18th May	Loughborough	M1000, W1000
31st May	Cardiff	M2000, W2000
15th Jun	Battersea Park	M800, W800
13th Aug	Watford	M1200, W1200

BMC Relay Meetings

Matthew Fraser Moat 01304 379777

30th Apr	Watford	MW 4x1500
11th Jun	Watford	JMW 4x1 Mile

BMC Gold Standard Meetings

North of England

Mike Harris 0161 499 1901

These meetings will always include 3k races

29th Apr	Stretford	MW800, M1000
20th May	Stretford	M800, W800
17th Jun	Stretford	M800, W800
1st Jul	Stretford	M1500, W1500
22nd Jul	Stretford	M800, W800
		M5000, W5000
12th Aug	Stretford	M1500, W1500
26th Aug	Stretford	M800, W800

Midlands

George Gandy 01509 230176

26th Apr	Loughborough	M5000, W5000
18th May	Loughborough	M1000, W1000
		M5000
21st May	Loughborough	M3000, W3000
3rd Jun	Loughborough	M800, W800
		M1500, W1500
		W10000
11th Jun	Loughborough	M5000, W5000

South of England

Tim Brennan 01753 535073
Pat Fitzgerald 01895 234211

These meetings will always include 3k races

16th Apr	Watford	M1000, W1000
30th Apr	Watford	MW4x1500
		MW10000
28th May	Watford	M800, W800
		M1500, W1500
11th Jun	Watford	JMW 4x1 Mile
25th Jun	Watford	M800, W800
		M1500, W1500
		M3000, W3000
16th Jul	Watford	M800, W800
30th Jul	Watford	M1500, W1500
		M5000, W5000
13th Aug	Watford	M800, W800
		M1200, W1200
27th Aug	Watford	M800, W800
10th Sep	Watford	M1500, W1500

BMC Regional Races

BMC South West

Mike Down 0117 973 3407

5th May	Millfield	JM800, JW800
	U15/U17 races	JM1500, JW1500
11th Jun	Southampton	M5000, W5000
19th Jun	Bath	JM800, JW800
29th Jul	Exeter	M5000, W5000

BMC Scotland

Brian McAusland 01567 830331

18th Jun	Glasgow	MW Mile, MW5k

BMC Regional Races

BMC Northern Ireland

Malcolm McCausland 01504 49212

19th Apr	Londonderry	M1000, W1000
11th Jun	Londonderry	MW800, MW5k
18th Jun	Antrim	M1500, W5000
24th Jun	Antrim	M800, W800
5th Jul	Londonderry	M1500, W1500
19th Jul	Templemore	M3000, W3000
3rd Aug	Templemore	M800, W800

BMC Wales

Mark Bryant 01656 880809

31st May	Cardiff	M800, W800
		M2000, W2000
11th Jun	Cwmbran	M5000, W5000
2nd Aug	Cwmbran	M1500, W1500
6th Aug	Cardiff	M800, W800

BMC London

Ray Thompson 01737 554450

18th Jun	Croydon	M800, W800
		M5000, W5000
2nd Jul	Tooting	M1500, W1500
6th Aug	Tooting	M800, W800
20th Aug	Tooting	M800, W800

Ron Allison 0181 858 9380

3rd May	Sutcliffe Park	M1000, W1000
5th Jul	Sutcliffe Park	M600, W600

Dave Pamah 0171 916 6764

19th Apr	Battersea Park	M600, W600
		M 2 Miles
15th Jun	Battersea Park	M800, W800

John Sullivan 0171 790 1961

6th May	Finsbury Park	M800, W800
3rd Jun	Finsbury Park	M800, W800
1st Jul	Finsbury Park	M800, W800
5th Aug	Finsbury Park	M800, W800

Tim Brennan 01753 535073

14th Sep?	Sutton	M800, W800

BMC North East

Phil Hayes 0191 265 2984

19th May	Jarrow	M5000, W5000
4th Jun	Jarrow	M1500, W1500
23rd Jul	Jarrow	M800, W800
9th Aug	Jarrow	M Mile, W Mile

BMC Humberside

Michael Gooch 01472 358809

? Jun	Sheffield	M5000, W5000
? Aug	Scunthorpe	M Mile, W Mile
? Aug	Grimsby	M800, W800

BMC Midlands

Bud Baldaro 0121 429 6579

18 Jun	Rugby	M5000, W5000

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.
Travelling expenses for certain selected junior athletes will be met by the Foundation for Sport and the Arts - please apply to Pat Fitzgerald.
BMC qualifying times for seniors are M800 1:56.0, M1500 3:56.0, W800 2:20.0, W1500 4:45.0.
BMC 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 BAF Coaches. All applications to join the BMC should be sent to the Membership Secretary, Andy Anderson, 49 Paulsgrove Road, North End, Portsmouth, Hampshire PO2 7HP, enclosing an A4 SAE. Annual subscriptions are £10, and there is a £10 joining fee which includes a free BMC vest or T-Shirt.