



BMC News

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Contents

3	Chairman's Report	28	Coaches Voice on UK Members Council/Mel Batty Obituary
4	Frank Horwill MBE	29	David Rudisha
7	5 Tier Training	30	BMC Awards
9	Running Economy –	31	Epic Moment for the 800m
10	Global Championships 2011	32	Training for Endurance Performance
12	New Interval Training?	34	Therapy, Technique, Training.
17	UK Rankings	36	BMC Scholarship/Indoor Races
19	Grand Prix Report	37	England Hall of Fame
24	2 Hour Marathon	38	Hannah England/John Knowles and the BMC Effect
26	Iron Deficiency in Athletes	39	BMC AGM



British Milers' Club

Founded 1963



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All official correspondence to the BMC should be addressed to the National Secretary at the above address. All matters so received will be addressed by the national committee at their next meeting. All other requests should be sent to the BMC Administrator Pat Fitzgerald and will be dealt with as soon as possible. Matters concerning specific areas of the club should be sent to the relevant person from the above list.

The BMC are always looking to expand its network of people and locations that host BMC races. If you feel that you can help or want to get involved then please contact the BMC Administrator Pat Fitzgerald.

Chairman's Report

BY TIM BRENNAN BMC CHAIRMAN

Welcome to the autumn 2011 addition of the BMC News. It has been a good year for the BMC race programme and an even better one for endurance running in this country. It was fantastic to see a British runner winning gold at world level. Mo Farah has had many significant runs in BMC races since he first ran a 14:05 5000m as a seventeen year old in 2000. These runs include 2001 – 13:56.31 5000m (first time under 14 mins) 3:56.49 mile in 2005 (first sub 4min mile), 13:30.53 5000m in 2005 (PB by 8 seconds). I am sure his performance this year will provide inspiration to all those competing in our races. In fact there is a growing men's 5000m presence in our meetings and we have seen a rise in the strength in depth of the event. This situation of quality at the top and improved strength in depth bodes well

for a continued rise in standard.

Our other British World Championship medallist was Hannah England another BMC regular whose use of the BMC is described elsewhere in the magazine. Interestingly Hannah first achieved a number one UK ranking as an U23 having been part of a very strong peer group coming through the age groups. It often seems to be the case that a group of high performers in an age group push up the standard but it may be the best senior success comes from the one chasing the leader of the rankings. If there is a lesson from this then it is to give opportunities and support to a level deep down in the rankings.

Our own race programme was once again supported from the McCain UKA Challenge and from Nike, whom we thank and without them we could not hope to put on such a comprehensive programme. Results

were good with three world championship qualification times. We also had some great performances from the younger age groups including BMC U20 records from Adam Cotton (3:41.33), Jonny Hay (13.57.16) and outstanding performances at U17 from Jessica Judd (2:02.70 and 4:14.21).

Our international meeting at Watford was successful in attracting a high quality of overseas athlete but performances did not quite flow on the day. We have had a look at the reasons for that and will be putting that learning into place for next year's meeting.

Our race programme will continue during the winter as we will be responding to demand to stage some indoor races.

On the coaching side this year we combined forces with European Athletics, UKA, England Athletics, and the Ron Pickering Memorial Fund to promote the European Endurance Conference. It was great to have Lord Sebastian Coe a BMC member as a headline speaker. The first time Seb ran under 1:50 was in a BMC race and it was a big PB of 1:47.7 set in 1976. Through combining forces we were able to have a very good quality of speaker and the feedback from people who attended has been extremely positive. Elsewhere in this magazine you will find reports on some of the sessions.

During the year a good number of members have contacted me with comments on the races or with suggestions of things we could be doing better. This has always been very constructive and helps us shape things for the future. Even better of course would be offers to help as we are frequently stretched and in need of extra volunteers..

Best wishes

Tim



BMC Grand Prix winner Tara Bird just shades Karen Harewood in the BMC Final at Birmingham

Cover Photograph

Women's International BMC Race at Watford.

By Mark Shearman

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The BMC News applauds Frank Horwill MBE

BY PETER THOMPSON

Frank Horwill, who continues to dedicate his life to improving distance running, celebrated his 84th birthday on 19 June 2011. One week prior to this date he received an early 'present' when it was announced in the Queen's Birthday Honours list on June 11th that Francis Horwill of East London had received an MBE for "Services to Athletics". The BMC applauds and celebrates this long-overdue and well-deserved recognition of our 'Comrade' and principal Founder with this article, which provides some of the background as to why one of Britain's greatest endurance coaches was awarded this recognition and Civil Honour.

Overview

Frank Horwill is an internationally respected Athletics Coach specialising in the endurance events. Within the sport of athletics in the UK he has been recognised for his prodigious output as a personal coach of 49 British male and female middle and long distance athletes who have represented their country on the track, over the country and on the roads.

Within this role of 'International Athletics Middle and Long Distance Coach', Frank Horwill has also chosen to maintain a sustained contribution to others through many avenues of coach education. The role of 'Coach Educator' is one he has embraced, inspiring and informing hundreds, if not thousands, of other coaches without detriment to his own practical, track-side coaching.

Perhaps the most outstanding role that Frank Horwill has played, and continues to play, is as the Founder of the British Milers' Club, the UK's premier specialist sports club catering for the needs of both developing and established middle and long distance athletes.

Service to British Athletics

Frank Horwill has coached with commitment as a volunteer coach under the accreditation of, historically, the England Amateur Athletics Association, AAAs; the British Amateur Athletics Board, BAAB; the British Athletics Federation, BAF and, most

recently, UK Athletics for which he is a UKA Level 4 (highest award) endurance coach.

He has coached 49 athletes who have gained a GB International vest under his tutelage and coaching. Athletes he has coached include Tim Hutchings, 4th place finisher in the 1984 Los Angeles Olympic Games and twice second place finisher in the World Cross Country Championships. He has taken athletes through from school age to become senior internationals and has coached World Master international athletes, some from his own squad of senior athletes. Frank's athletes stay with his squad and stay with the sport of Athletics because of their training in a programme imbued with enthusiasm and motivation, both intrinsic and extrinsic.

As a volunteer coach, Frank Horwill has, for over 50 years now, coached his squads at least four days a week and at weekends.

Now, approaching the age of 85 years and in poor health, he still insists, selflessly, on coaching a group including his three current GB International marathoners at the Battersea track on Monday, Tuesday and Thursday evenings and his two-hour Saturday morning sessions remain the stuff of running legend.

The 'Horwill Five-Pace System' and 'Horwill 4-Seconds Rule'

In the early 1970s Frank Horwill formulated and innovated the 'Five-Pace System' of training, which was utilised by many, most famously Sebastian Coe, Said Aouita and, more recently, the 2000 Olympic 1500m Champion, Noah Ngeny. Frank's system has become the foundation of many of the multi-pace systems of training being used by coaches around the world today.

He also formulated and innovated the



'Horwill 4-Seconds Rule', which relates the potential pace of an athlete for various distances. Like many ground-breaking systems and rules they seem obvious, once stated. It takes a special and creative person, however, to make the initial statement.

As a writer, he was co-author in the early 1970s of 'The Complete Middle Distance Runner' with Dennis Watts and Harry Wilson. This long out-of-print book is held in such high regard internationally that it is currently exchanging hands on the internet at prices of 400 to 1,300 US dollars. In 1994 he wrote 'Obsession for Running', described by The Daily Telegraph as, "The athletics book of the year".

He has authored in excess of 120 articles for publications such as the 'BMC News', 'Athletics Weekly', 'The Coach', 'Running Times', 'Peak Performance' and 'Ultra Fit'. He somehow finds time to write short stories including the winner of 'Writer' magazine award for 1980, 'The Man Next Door'. Another one titled, 'The Failure' was clearly not autobiographical.

His Contributions to Athletics

Frank Horwill's contributions are globally recognised in the running community. These contributions have helped others to achieve success at the highest international levels. It must be emphasised that his impact on other coaches is tremendous within the UK, as a role model and as an inspirational and motivational educator, but extends well beyond these shores.

It is often said that one can never be a prophet in your own country but Frank has managed to achieve this, to be a 'prophet' in the UK and still be recognised as a 'prophet' abroad. He has lectured internationally, including, in Canada, Poland, Zimbabwe, Kenya, Bahrain, Portugal and South Africa. In South Africa, for example, he is still sought out by established and upcoming coaches and athletes whenever he makes one of his regular visits to the country.

Frank Horwill has never shirked from saying something controversial, if he believed it was for the good of athletics, and this honest determination is to be seen in everything he does, which is to remain consistently faithful to the BMC, his athletes and to the community of athletics.

But Frank's contributions extend far beyond the relatively narrow confines of international-level middle and long distance running. Through his articles he has helped thousands upon thousands of recreational

runners both in the UK and abroad. He is able to express for them the principles of achievement at the highest levels in a way that is understandable and meaningful for their own endeavours. For example, the Serpentine Running Club in London is one of the largest recreational running clubs in the UK (2,332 members of whom 44% are women) and has, with Frank's permission, posted 72 of his articles on their website. (These articles are viewable on www.serpentine.org.uk/pages/advice_frank.html)

Duration of Voluntary Service

Frank Horwill's commitment has been without break over a time period of fifty years, from when he first commenced coaching.

In June of 1963, Frank Horwill founded the British Milers' Club, following a year in which British male middle distance athletes failed to enter the top ten of the World or European Rankings.

In 1965 Frank coached his first UK indoors record-breaker at 800 metres and was to repeat this in 1966 with the women's 1500 metres. In 1971 one of his female athletes ran a world's best 3km time indoors. In the course of the next five years of coaching, his athletes broke five UK indoors records. He has, however, never rested on his achievements as a coach. During his long career five of his athletes have run sub-4 minute miles – the fastest being Tim Hutchings, who ran 3:54.53.

Frank Horwill's contribution has been sustained to the current day, producing, to date, 49 GB International representatives. During this time he has devoted at least four or more days a week to coaching track-side – thousands of volunteered hours pursuing his avocational 'profession'.

His commitment to coach education began with the founding of the British Milers' Club and continues to the present day, when he is invited by various organisations, clubs, counties and regions to speak to their athletes and coaches. What impresses is that he has always moved forward encouraging new innovations in his own practice and applying this to others' practice. This is as true today, at 84 years of age, as when he first started the BMC in 1963.

Recognition within the Athletics Community

Frank Horwill's contributions and achievements are globally recognised in the athletics and running community and by the media who cover this relatively small

Horwill's Quotes

Frank Horwill is a man of many quotes including, "We've only just begun to work", "Anyone can run fast repetitions and have a cup of tea and a bun after each repetition!", "Keep going, keep going, keep going until a little something inside you says, "Keep going"".

Track side, at the 200m mark at BMC meetings he has been heard offering 'encouragement', saying, "If you can't go faster than that - get off the track."

When talking about his time coaching at Battersea, his frequent quote is, "When I come to the track, I become alive."

area of sport. An example of this is The Daily Telegraph's reaction to his 1994 book, 'Obsession for Running'; described by them as, "The athletics book of the year".

Frank has not sought reward or award for his dogged commitment to his athletes and the British Milers' Club. But the 'word' of the BMC has spread to other countries, driven from like-minded individuals within these countries, so that we now see 'Milers' Clubs' in Ireland, Australia, the United States of America, New Zealand and Malta. Each of these clubs has reciprocity with the BMC and each club knows and respects the role and place of Frank Horwill.

His Place in British Athletics

In 1676, Isaac Newton stated, "If I have seen a little further it is by standing on the shoulders of Giants." Frank Horwill has 'seen far' and would recognise the giants upon whose shoulders he has stood, while he has also continuously seen things in a fresh and innovative way. But, within the middle and long distance running community, Frank has been recognised, himself, for many years to be one of the 'International Giants' upon whose shoulders so many others now stand.

Frank matches his achievement by producing his results in an ongoing atmosphere of focussed fun. His energy, enthusiasm, humour and passion are infectious and, as has already been said, his athletes have longevity because of their enjoyment derived from the training environment and process he creates.

It must also be said that Frank Horwill stands out also because of his incredible selfless commitment to athletics and athletes - this is without doubt. This is true

throughout his coaching career but over the past twenty-five years he has, increasingly, had to battle significant health problems. He has had two operations for cancer of the stomach in the 1990s, and has one third of his stomach left. Three years ago he had major heart bi-pass surgery and is now battling Amyloidosis. Despite occasional chemotherapy and frequent hospital visits he attends training sessions at Battersea as before, placing what physical energy he has into care for his group of athletes. Despite this precarious health status, he still regularly produces one or two thought-provoking articles a week for various magazines. But his passion and enthusiasm for coaching burn is brightly as ever. When talking about his time coaching at Battersea, his frequent quote is, "When I come to the track, I become alive."

In the future, Frank Horwill will be remembered by the running community for so many things, not least as Founder of the British Milers' Club, innovator of Five Pace training and the Four Seconds Rule. He has created a legacy of coaching knowledge and practice. But the enduring legacy is, and will continue to be, the BMC, which continues to drive British men's and women's international running forwards. It is appropriate for Frank Horwill's far-reaching achievements to be recognised and honoured in his lifetime.



Eventual Winner Gemma Turtle (267) with runner up Hannah Walker in the Birmingham Grand Prix Final 5000m

A Brief Biography of Frank Horwill and the BMC

He was born **Francis J Horwill** at Alpertown, near Wembley which in the 1920s was in the open countryside, surrounded by farms, outside the smokey, urban bustle of London.

Frank was a good all-round athlete as a youngster and was a member of Finchley Harriers from the age of 15 until his early 20's. As a young man, during and following World War II, he worked as a farmer and a miner, as one of the 'Bevin Boys'. He had planned on going to South Africa as a gold miner but instead took a Peoples Dispensary for Sick Animals, PDSA, course and became qualified to work with animals with the RSPCA. He later became a 'private investigator' for several years.

When he decided to take up coaching, he did so with such characteristic thoroughness that by 1961 he had become an AAA Senior Coach. During the past 50 years, he has become best known as the Founder of the British Milers' Club.

In June of 1963, Frank Horwill wrote a letter to Athletics Weekly suggesting the formation of a specialist club dedicated to raising the standard of British miling by such means as special races, coaching courses and the exchange of coaching

information. Ten 'founder members' made up the first meeting and they invited Sir Roger Bannister to become President, and three other middle distance luminaries, Gordon Pirie, Sydney Wooderson and Derek Ibbotson, to be Vice Presidents of the new club. The original objectives of the BMC were set out in the club rules as:

- to raise the standard of British miling to world supremacy
- to increase the knowledge of coaches and others interested in the event

The early entry standards for the mile were 4:20 for senior men and 5:15 for women, with annual subscriptions set at five shillings. Member number one was Hugh Barrow of Glasgow who had just won the British Junior Mile title leading from the front, epitomising the philosophy of the BMC. The club divided the country into regions, with each region having a qualified Senior AAA Coach as secretary who organised paced races and training days. In the days before highly paid professional 'rabbits', each BMC race had a designated 'hare' selected from the athletes who had entered the race who was responsible for the fast, pre-determined pace through the first half to three quarters of the distance.

The first BMC invitation race was in the North of England and can be considered a qualified success. The race itself proved a fine duel between Derek Grahame of Northern Ireland and Neil Duggan of Sparkhill Harriers, with Duggan prevailing in 4:06.5. Half the invited field, however, failed to appear at the race. The BMC decided to implement a tough policy with those athletes who accepted race invitations in writing and then failed to show. They were banned from all BMC races for a year unless they could prove injury, sickness or being picked for GB & NI on the same day. It was interesting to see the British Athletes Association in 1996 echo this policy with their requirements for British International athletes competing in BAF invitational events.

By 1980 our men had achieved the BMC's original objective of raising the standard of British men's miling to world supremacy when Sebastian Coe and Steve Ovett shared both Olympic Golds and World Records between them. In 2004, Kelly Holmes took British women's middle distance running to similar world supremacy when she achieved Gold in the 800m and 1500m at the Athens Olympic Games.

Frank Horwill's 5-Tier System

MATT LONG

The early 1970s saw British Milers Club founder Frank Horwill MBE introduce the 5-Tier System of training which now has a well established global reputation. Dr. Matt Long argues that in order for British middle distance and endurance running to move forwards that much can be learnt by looking back at some old ideas.

Frank Horwill's system

At the heart of Frank Horwill's specific system were two interrelated principles, namely (a) multi-paced training; and (b) the four seconds rule.

a. Multi-paced Training

Sometimes referred to as '5 pace training' or 'multi-tier training'. This system involves progressing athletes through 5 different paced sessions over a specified cyclical training microcycle.

b. The Four Seconds Rule

Horwill made the assertion that the pace of an athlete slows by about 4 seconds a lap for men, or 5 seconds a lap for women, as the race distance increases (i.e. 400m, 800m, 1500m, 3km, 5km.) The system was primarily developed to combat what Horwill (2011) has more recently referred to as the 'illogical use of recovery times'.

According to internationally acclaimed coach and coach educator Peter Thompson, "These small differences are the order of variation we should observe in training paces when coaches are assessing the running rhythms of their athletes". (<http://www.newintervaltraining.com>). This system had the principle of specificity at the heart of it by involving the following:

- One workout at projected race pace.
- Two workouts over distances shorter and paces quicker than the targeted race distance and projected pace.
- Two workouts over distances longer and paces slower than the targeted race distance and projected pace.

These sessions would take place over a 10-14 day period, being interspersed with recovery days of lighter running.

The success of Horwill's system

This system received acclaim in the mid 1970s from Peter Coe, who praised a "reasoned theoretical base for a training system that would be comprehensive and would maximise both speed or stamina". (Horwill, 1991: 3). The system was proven by Horwill who coaches and continues to coach numerous world class athletes. These included two-time world cross country silver medalist and 1984 Olympic 5,000m 4th placer Tim Hutchings.

Former European and Commonwealth 5,000m bronze medalist, Hutchings, credits his 13m11s PB in the sweltering heat of the Los Angeles Coliseum to prolonged use of Horwill's system. He tells me that he found it to be, "a comprehensive program which covers all bases" and that, "if used diligently and intelligently it ticks 98% of the boxes". The BBC and Eurosport



"(Horwill's system) is a comprehensive program which covers all bases and if used diligently and intelligently it ticks 98% of the boxes".
Tim Hutchings

commentator continues that the system, "is great for young athletes" adding that he refined his workouts only later in his career with the use of pyramid work whilst training with Seoul Olympian Steve Binns. During the 1980s the system began to have a more global appeal and was utilised by the great Said Aouita who exhibited an incredible range of abilities from 800m-10,000m.

Contemporary benefits of Horwill's system

Athlete-centred goal setting

Target times in races for the athlete are able to be set for distances between 400m and the marathon. and endurance events between Athletes and coaches are able to see which event(s) they are strongest at and which they need to work at in developmental terms. In the words of elite level coach and National Trainer, Jeremy Harries, " Frank Horwill's system allowed me to structure activities and effectively gave me a spreadsheet with target times". The use of Horwill's system as a motivational tool cannot be underestimated.

A benchmarking tool for both athlete and coach

It is because both the multi-paced system and the four second rule provide both athlete and coach with quantifiable targets, that the system is an excellent benchmarking tool both in training and in racing.

Ability to educate the athlete in terms of pace judgement

Horwill's system makes explicit target pace times and this can be reduced to both lap times over 400m and even to pace setting over 100m subsections of a training session or a race.

Adaptability throughout 12 month macrocycle of periodisation

Whilst some coaches advocate predominantly off-track training for the middle distance and endurance athlete, Horwill espoused the benefits of an athlete operating at or at least close to race pace out of season. This inevitably involved the use of the track to achieve sessions based around both speed and aerobic endurance. This effectively means that Horwill's system can be adapted throughout a 12 month macrocycle and used explicitly in both preparation and competition periods before the recovery based transition period.

Table one: Horwill's 4 second rule in tabular form

Pace	Time (example 1)	Time (example 2)	Distance	Recovery
5000m	105 sec/lap	76 sec/lap	4 x 1 mile	60-90 secs
3000m	100 sec/lap	72 sec/lap	6 x 1000m	75-120 secs
1500m	95 sec/lap	68 sec/lap	6 x 600m	90-120 secs
800m	90 sec/lap	64 sec/lap	4 x 400m	120-180 secs
400m	85 sec / lap	40 sec / lap	8 x 200m	120-180 secs

Adapted from Frank Horwill *Obsession for Running*, 1991

The misapplication of Horwill's system in practice

Can stifle communication between coach and athlete

Having endorsed Horwill's system, the aforementioned Jeremy Harries warns that it "can take the coaching aspect away". Horwill's system is underpinned by a reliance on quantitative data in the form of target times and an over-reliance on this system can result in a lack of qualitative discussion between athlete and coach. The system offers both athlete and coach feedback about extrinsic performance but there is a danger that the intrinsic feelings of both the athlete and intangible perceptions of the coach can be ignored because of a pre-occupation with the numerical.

The four second rule is not cast in a tablet of stone

Whilst offering a degree of scientific objectivity, Horwill himself was the first to acknowledge that this rule should not become fetishized. A five second rule was advocated for female athletes and Horwill (1991: 17) admitted that at world class performance levels, "these 4 and 5 second rules do not yet quite convert". In revisiting Bill Bowerman's (1991) concept of 'date pace', Peter Thompson, for example, advocates a more fluid system of 'running rhythms', based on the perceptions of the athlete, rather than slavish adherence to target times. (<http://www.newintervaltraining.com>)

Failure to adhere to the coaching principle of individualisation

This occurs when coaches fail to take into account the interrelated variables of (a) chronological; (b) biological and (c) training age(s). The system has a variable application over a 10 to 14 day microcycle but in practice coaches may fail to set an appropriate time frame for the said microcycle and do one of two things. (A) the coach may set a younger or developing athlete the 5 sessions in too short a time period, failing to achieve progressive overload and risking both loss of form and injury to the athlete. (B) The coach may set a more experienced athlete the 5 sessions in too long a time period which exceeds the recommended 10-14 day microcycle and thus negating full training benefits.

Focus on short-term gains at expense of long-term athlete development

Peter Coe categorically stated that the system could produce long term sustainable

improvement as it had with Sebastian, in addition to short term gains. "The length of (Seb's) career, some fourteen years at the top shows, that if properly applied, it is not a recipe for 'burn out'". (Ibid, 1991: 3). Utilisation of Horwill's system requires the athlete to have a good level of aerobic fitness prior to the commencement of repetition or interval training. It additionally requires both athlete and coach to consent to long-term sustainable development.

Coaching understandings of Horwill's system

In my decade as both an endurance coach and more recently a coach educator with UK Athletics, I have noticed that coaches tend to fall into one of four categories in terms of understanding Horwill's system. These categories can best be understood by utilisation of the work of Noel Burch. (Adams, 2011).

The Conscious-Competence Learning Matrix:

3. The unconsciously incompetent coach.

This type of coach talks typically of the need for endurance athletes to engage in 'speed work' but in practice fails to adequately distinguish between aerobic and speed endurance work outs. He or she has limited understanding of Horwill's 5 Tier System.

4. The consciously incompetent coach

This type of coach has read the work of Horwill over a number of years and does possess an understanding of the 5 pace system. Whilst these coaches acknowledge the need for variable pace workouts in practice, very rarely is the 4 second rule applied and there is very little attempt to work through the 5 paces within a clearly defined microcycle.

5. The consciously competent coach

This type of coach is aware of Horwill's work, making a conscious attempt to try and follow the principles advocated through systematic planning of training diaries and by committing to a proactive athlete-centred approach.

6. The unconsciously competent coach

This type of coach is a rarity. He or she is well versed in practicing the principles advocated by Horwill and has done so for numerous years. This being said, the 'unconscious-competence' means that rather than treating the work of Horwill as 'gospel truth' these coaches are happy with an eclectic mixture of coaching philosophies. They acknowledge that Horwill's work has a valuable application and can be adapted

to the challenges of working with athletes in the twenty-first century.

Conclusion: Frank Horwill's 5-Tier legacy

A keen advocate of 'new interval training' which incorporates the use of more active 'roll on' recoveries, Peter Thompson (2005) articulates in a nutshell one of the greatest legacies left by the work of Frank Horwill by stating that, "Today most top runners follow some variation of a multi-pace system. What Frank stated in the early 1970s may appear obvious now but it takes an enquiring and creative mind to say something for the first time. When Frank first outlines his 5-Tier System it was ground-breaking".

What this article has hopefully encouraged you to do is:

- Acknowledge there is merit in revisiting some well established ideas articulated four decades ago.
- Consider the difference between coaching ideology and coaching practices.
- Think about how conscious or unconscious we are in terms of both understanding and applying the ideas and concepts of one of Britain's greatest endurance coaches.

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About the author

Dr. Matt Long is a trainee UK Athletics Tutor, coaches endurance athletes at Notts AC and is Director of the Burton Track and Field Academy. He was shortlisted by the British Milers' Club for the 2011 Frank Horwill scholarship for his work on this paper. He welcomes feedback on 07983864114 or matt@mattlong.wanadoo.co.uk.

Another Look at Running Economy

BY BRENDON BYRNE

The subject of running economy was covered in the BMC News - Spring 2008. It was suggested then that economy is a better predictor of performance than either V02 max or lactate threshold. The problem is that running economy is not understood by many. It is curious that sometimes even science cannot provide an explanation of how the runner's body works.

Running economy refers to how efficiently the body uses oxygen when you are running at sub maximal speed. Runners who are able to do more work with a given volume of oxygen are more efficient. This would go some of the way to explaining why athletes of a similar V02 max can perform quite differently in races. It is an interesting point that the physiologist Bengt Saltin, has shown that there is no major difference between the V02 max of Kenyan runners and Europeans. This suggests that there must be something else to explain the dominance of the East Africans. On that point don't forget that Mo Farah was originally Somalian. Incidentally, the most efficient runner ever measured has been Zersenay Tadese of Eritrea, the world cross country champion in 2007.

It would seem that it is a matter of how little oxygen you use for a given effort, not how much oxygen you have to use that matters. Of course a well developed cardio vascular system is also very important.

What therefore contributes to greater running economy? The experts maintain that the following physical characteristics are relevant:

- Height- shorter than average
- Somatotype – long limbed, lean, ectomorphic
- Body fat- low (although very low is not always best)
- Calves – smaller calves than average
- Kinematics – less vertical movement

For those with very long memories an excellent example of the last point is Abebe Bekila of Ethiopia who won the 1960 Olympic marathon in Rome running bare-footed.

What can be done to improve economy?

There is a difference between a novice and experienced runners. Often the more you run the more the body adapts and efficiency improves. As mentioned in BMC News

2008 all wasteful movements need to be eliminated. Running is a technical skill that can be learned and improved. Some coaches are prepared to ignore this point. Michael Johnson's documentary "Usain Bolt – The Fastest Man Alive" indicates that there are areas that even he can improve mechanically! Although of course, this is not the same sort of economy that distance runners are aiming for.

Toby Tanser has indicated that part of the answer derives from the foot. Kenyan runners have "strong ankles with spring like qualities that allow the body to bound along"

Strength training and plyometric work (the stretch shortening cycle) have both been shown to improve running performance and economy. The key items here are high intensity drills that include bounding, hopping, sprinting and jumping. They must be introduced cautiously and not overdone Soft surfaces are good to reduce the risk of injury.

Sessions could include:

- Hill sprints of 50-80 metres
- High knee drills
- Bounding
- Single leg hops.

There are many sources of information about plyometric work. Incidentally, Finnish research has shown that good results can be obtained in a relatively short space of time. This is achieved by improving energy returns from muscles and tendons. It is important to bear in mind that the best runners spend less time in contact with the ground, not more

A good range of flexibility is important but too much flexibility can have a negative effect. Why? – Excessive flexibility does

not help stability in the core and the legs. You must have a good range of movement but any extra in the running movement is wasteful. In fact 'tighter' runners are more economical than 'looser' runners. Balance in the range of motion is what matters most. It is however, important to make sure that there is a good range of movement in the hip flexors and extensors.

A point here that could be important is the use of video analysis. Apart from camcorders there are a number of SLR cameras capable of recording movement. With the aid of a laptop there can be almost instant feedback for the coach and the athlete.

Further observations from Toby Tanser about the Kenyans indicate that they like to run on soft surfaces that don't kill speed (and presumably also reduce the risk of injury). Walking barefoot also encourages springy levers. Perhaps shoe manufacturers wouldn't be too keen on these comments. It is also felt that too much cross training strengthens non running muscles and can put the body out of alignment. The Kenyans, according to Tanser, believe in keeping things simple. It has also been mentioned elsewhere that the Kenyans use a considerable amount of high intensity training at times, which also improves economy of effort.

More Fire by Toby Tanser, Westholme 2008
BMC News Spring 2008,
The Runners Body 2009 , Rodale
Case Study: The Truth Behind Kenyan
Endurance Running. Peak Performance
2009

BBC: Usain Bolt- The Fastest Man Alive by
Michael Johnson



David Bishop wins the 1500m at Solihull from an international field with Bruce Raeside (119) 4th

Global Championships – 2011

Success or Failure. Progress or Stagnation

BY DAVID SUNDERLAND

Were the recent World Championships a success or failure for the UK athletes? Two wonderful medals – including the first ever male success at the 5k – for Mo Farah, an unexpected but a deserved silver medal from Hannah England (1500m), a personal best from Emma Jackson (800m) and seasons best for Dave Webb (Marathon) were the highlights.

However, only 2 athletes Mo and Hannah made Finals (Top Eight) – see the table 1 below – although Mo did it twice for a total of 3 from 15 athletes at the Championships.

Of the 45 places available – 5 for each marathon for the World Team races – only 16 of these places were filled. This means approximately only 35% of the places were allocated.

Once again Africa – mainly in the guise of Kenya – dominated winning every available male title, except the 5k!! The Kenyans amassed 17 individual medals, but surprisingly failed in their strong events – Men's 5k/10k – to win a medal and also in the Women's 1500 metres!!

On the Women's side Russia with 2 titles and the USA with one stopped the African (Kenyan) domination – see Table 2. The 36 available individual medals were shared amongst 10 countries with Kenya (17) just gaining under half of them, followed by Ethiopia (5), with Europe gaining 8 medals.

Table 1

Name	Event	Heat/1 Race	Semi-Final	Final
Jenny Meadows	800m	2:01.11 (1st)	1:59.07 (3rd)	
Marilyn Okoro	800m	1:59.74 (4th)	2:01.54 (7th)	
Emma Jackson	800m	2:01.17 (5th) FL	1:59.77(5th) PB	
Hannah England	1500m	4:13.45(1st)	4:08.31 (6th) FL	4:05.68(2nd)
Lisa Dobriskey	1500m	4:12.70 (11th)		
Barbara Parker	Steeplechase	9:39.21 (5th) FL	-	9:56.66 (14th)
Helen Clitheroe	5000m	15:37.73(8th) FL	-	15:21.22 (12th)
Susan Partridge	Marathon	2h 35.67 (24th)		
Alyson Dixon	Marathon	2h 50.51 (42nd)		
Michael Rimmer	800m	1:47.11(5th)		
Andrew Osagie	800m	1:46.08(2nd)	1:46.12 (4th)	
James Shane	1500m	3:41.17 (10th)		
Mo Farah	5000m	13:38.03(2nd)		13:23.36 (1st)
Mo Farah	10000m			27:14.07 (2nd)
Dave Webb	Marathon	2h 15.48(15th) SB		
Lee Merrien	Marathon	2h16:59 (22nd)		

Apart from the British highlights there were some exciting races and events with surprisingly slow finishing times (Women's 1500m 46.5 last 400m off a slow pace and the Men's 5k only 13:40 pace to 4k). Rudisha was imperious as he held off both

Kaki and Borzakovskiy in the Men's 800 metres and similarly Kipligat in the 1500 metres, and Kemboi in the Steeplechase. Farah ran an astute race (52.7 last 400m) to win the 5k but found a 53s last 400m not good enough in the 10k. There was a great display of dominant running by defending champion Kirui in the Marathon winning by virtually 2 and half minutes!!

On the Women's side the 800 metres was the most compelling race with Savinova running down defending champion Semenya and long time race leader and former champion Busienei (Jepkosgei) with all the finalists going under 2 minutes, and posting quick times.. The 1500 metres as well as Hannah threw up a surprise winner in Simpson (USA). Whilst Zaripova gave a technical lesson to her African rivals in the Steeplechase. Kipligat led Kenya to a 1, 2, 3 in the Marathon and Vivian Cheriyot had an amazing double in the 5 and 10k events. Her clash with a fit Diaba and similarly Mo with a fit Bekele could well be the highlights come London and 2012

So were the Championships a success for Briton or did the 3 medals from two athletes skew the overall results? Irrespective of



BMC Athlete of the Year!

Table 2

Medal	Kenya	Russia	Ethiopia	USA
Gold	7(4M/3W)	2(2W)	1(M)	1(W)
Silver	6(3M/3W)	0	0	1(M)
Bronze	4(4W)	1(M)	4(3M/1W)	1(M)
Total	17	3	5	3
	UK	Others		
Gold	1	0		
Silver	2	3	Sudan(M)	SA/Tunisia(W)
Bronze	0	2	France(M)	Spain(W)
Total	3	5		

Table 3 – European Under 23 Finalists (Top 8)

NAME	EVENT	TIME	POSITION
LynseySharp	800m	2:00.65s	BRONZE
StaceySmith	1500m	4:23.53s	7th
StevieStockton	5000m	15:58.51s	BRONZE
EmmaPallant	5000m	16:12.57s	7th
HannahWalker	5000m	16:13.06s	8th
EilishMcColgan	3kSteeplechase	9:52.02s	6th
MukhtarMohammed	800m	1:48.01s	BRONZE
JamesShane	1500m	3:50.58s	SILVER
RossMillington	5000m	14:22.78s	SILVER

Table 4 – European Under 20 Championship Finalists (Top 8)

Name	Event	Time	Position
Rowena Cole	800m	2:03.43s	SILVER
Emelia Gorecka	5000m	16:13.04s	SILVER
Annabel Gummow	5000m	16:14.62s	BRONZE
Adam Cotton	1500m	3:43.98s	GOLD
Jonathan Hay	5000m	14:07.78s	BRONZE
David Vernon	10000m	32:13.05s	6th

whatever conclusion is drawn what does the future hold for 2012 and beyond?

For a variety of reasons the following potential athletes were missing or unavailable from the UK team – Baddeley, Lemoncello, Thompson, Lancashire on the Men's side and Pavey, Thomas, Yelling, Murray, Radcliffe and Yamauchi. The question is how many of these have seen their best years, and how many would make next years Olympic team bearing in mind the average age of the missing women is 35!

Perhaps it is the next generation of UK athletes we should be

looking at as future London Olympians.

Below in Tables 3 and 4 are the finalists from both the European Under 23 Championships and European Junior Championships (Under 20). A total of 10 medals were achieved. 2 Silver (Shane and Millington) and 3 Bronze (Sharp, Mohammed and Stockton) - in the Under 23 Championships, and 1 gold (Cotton), 2 Silver (Cole and Gorecka), and 2 Bronze (Gummow and Hay) – in the European Junior Championships. Hopefully some or all of these athletes will step up to the plate in the next few years.

Rowena Cole on her way to a medal in the European Under 20 Championships in Tallin



Design more Effective Sessions with the 'New Interval Training'

www.newintervaltraining.com

BY PETER THOMPSON

Two coaches were walking slowly towards the entry gate of their local track. "I'm going to try something new with my athletes tonight," said one. "There's nothing that's new," came the reply from the older, more experienced coach, who continued, "Every thing that they say is new we've been doing for years." Trying not to be intimidated by this 'enthusiastic' response, the young coach countered, "It's interesting that the coach who wrote about what we're going to try tonight has actually pointed out that some coaches have been doing similar types of sessions in the past to what he has specifically developed and is proposing. The difference is that the physiology that we know now was not previously known. This gives us the opportunity to understand the how and why previous sessions have 'worked' and to plan even more effective sessions than ever before."

As they passed through the gateway to the track the two coaches separated. The first going straight to his already assembled athletes who were eager to learn more about the new session that they had been promised. The older coach continued walking, mumbling to him, "They think it's new but there's nothing that's really new", while at the same time glancing around and wondering where his athletes were. Several metres away, the young coach was about to introduce his athletes to a session of 'New Interval Training'.

Just what is this 'New Interval Training' that has recently received much wider attention in coaching circles? It's a training method that I have developed as I produced a very successful group of athletes, establishing six world best performances on the roads at distances from 15 Kms to 30 Kms, including the Half Marathon. The method is designed for runners and athletes of all ages and it is as appropriate for recreational runners who want to improve and develop their fitness as it is for club athletes through to Olympians, from the sprints to the marathon. But for the BMC News reader, it is enough to know that it is definitely

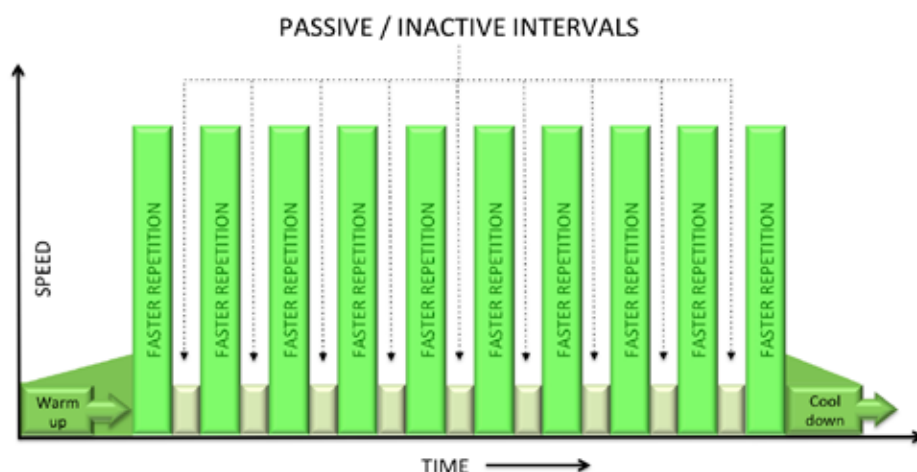
appropriate for middle distance athletes.

The aim of this article is to provide a little of the background of how, over the past 35 years, I have developed 'Lactate Dynamics Training' (1994) and the 'New Interval Training' (1995). More than that, it will lead you to the website www.newintervaltraining.com.

com where you can learn much more about this ground-breaking, systematic approach and be shown in more detail how to create 'New Interval Training' sessions yourself to benefit you and your athletes.

'Interval Training' is simply and very specifically any repetition training where

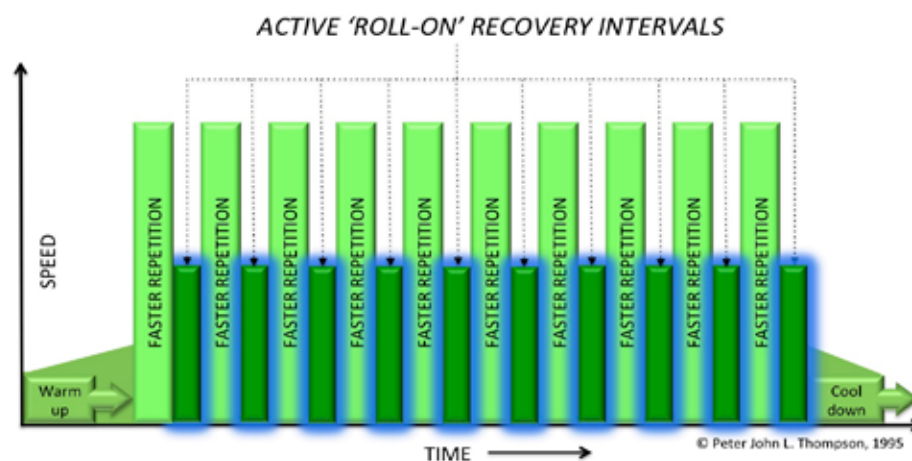
TRADITIONAL REPETITION TRAINING



Traditional Repetition Training – breaking a distance into smaller distances which are repeated – 'repetitions'

www.newintervaltraining.com

NEW INTERVAL TRAINING



The Training Effect takes place in the ACTIVE 'ROLL-ON' RECOVERY INTERVALS

www.newintervaltraining.com

A comparison of Tradition Repetition Training and the 'New Interval Training'

The term 'interval training' should only be used for the specific repetition training where the training effect takes place in the interval between the faster sections.

"All interval training is repetition training but not all repetition training is interval training."

the training effect takes place during the recovery intervals between the faster paced runs. The 'New Interval Training' is simply and very specifically any repetition training where what the athlete does during the 'recovery intervals' is crucial and actually has a profound effect on the training of the metabolic energy systems. From this we can see that "Interval Training is always Repetition Training but Repetition Training is not always Interval Training".

What the athlete does in the interval between the faster repetitions in the 'New Interval Training' is an active 'roll-on' running recovery. The effect of this active roll-on recovery is to supercharge the development of the synergistic relationship between the lactate and aerobic energy systems, improving performance at all paces and distances. Your athletes will run faster for longer as their running economy; their velocity at $\text{VO}_{2\text{max}}$, the $\text{vVO}_{2\text{max}}$, and the time they can run at their $\text{vVO}_{2\text{max}}$, the $\text{tl}_{\text{limvVO}_{2\text{max}}}$, all improve. Exactly what this 'roll-on' recovery is and how to do it effectively will be briefly explained later.

'New Interval Training' helps us to understand why some types of running training have worked so well in the past and, importantly, explains how to make new and even more effective training sessions for the future. But before we can look at the exciting prospects of the 'New Interval Training' we must remind ourselves what the old interval training really is and precisely why it is called 'Interval Training'.

Old Interval Training - the original 'Interval Training'

To find the origins of the special form of repetition training known as 'Interval Training' we must go back in history, over 70 years to the late 1930s. At that time a German coach, Dr. Woldemar Gerschler, was a pioneer attempting to base his training methods on solid physiological and psychological principles. For the physiology, he teamed up with cardiologist Dr. Herbert Reindel and they applied Gerschler's

understanding of the importance of cardiovascular conditioning in the search for a training method that would maximise the size, fitness and efficiency of the heart.

Gerschler and Reindel initially carried out research on training session structures and from this experience they devised a form of repetition training where an athlete would run over a relatively short distance, such as 200m, at a relatively fast pace, a number of times with a very specific recovery. The name of the system, 'Interval Training', was because the rest or recovery period between the faster runs, the interval, was considered the most important and vital part of the training. It is during the interval that the heart adapts, growing larger and stronger.

In its original form, the faster repetition would be run at a pace to achieve a heart rate of around 180 beats per minute, bpm. The next faster repetition run would start as soon as the heart rate had returned, in the interval, to 120 bpm. The training principle was based on the fact that the volume of blood in the body is constant for a given individual. As the heartbeats diminish in the interval for the same volume of blood, the quantity of blood pumped at each beat is increased in volume – the training effect comes then as the heart rate decreases.

If this reduction of the heart rate to 120 bpm did not occur within 90 seconds of the end of the previous faster run, the workout was considered too difficult and had to be adjusted. Otherwise, the heart would be overworked, leading to fatigue and exhaustion, rather than to the desired training effect.

What was the impact of this innovative interval training all those years ago? On July 15, 1939 Rudolf Harbig, having been coached by Gerschler using interval training, raced 800m in 1:46.6. This represented a massive 1.6 seconds improvement on the world record and is still recognised as one of track's landmark performances. Less than a month after his 800m record, Harbig covered 400m in the world record time of 46.0. Harbig's 800m record endured an incredible 16 years until Roger Moens, again coached by Gerschler, ran 1:45.7 in 1955. More significantly, it raised the world's attention to a new method of training. Interval training became well and widely known, spreading from Athletics to all other sports. It is still used by many coaches and athletes today in various guises but the essential thing is that the training effect takes place during the interval

between the faster runs or efforts.

The advantage of the original interval training was that it brought about very rapid and significant improvements in performance. The disadvantages were that it could be incredibly monotonous and the rapid improvements in fitness were matched by an almost as quick loss of fitness on cessation of training, for what ever reason. It is now recognised that a longer lasting fitness can be achieved if the original interval training is combined with sufficient aerobic endurance development to stabilise the improved cardio-respiratory response.

"The only similarity between the original Interval Training and 'New Interval Training' is that the training effect takes place specifically in the interval between the faster repetitions."

'New Interval Training' is Identified

Move on rapidly through history from the early 1900s to the present day and our understanding of how the body produces metabolic energy has vastly changed and it is possible to identify and define a new type of Interval Training, where the training effect we're looking for happens again specifically in the recovery intervals between the reps, the faster runs. The difference is that while Gerschler's Interval Training trains the development of the heart during the recovery intervals, the 'New Interval Training', during the recovery interval, trains the development of the inter-related aerobic and lactate energy systems' function.

In 1994 I introduced the term, 'Lactate Dynamics Training' to specifically classify the training for the dynamic utilisation and clearance of lactate so that lactate is optimally used around the body. How does this fit in with the current thinking on lactate and lactic acid?

As a coach or athlete you're probably aware that lactic acid can form when you're exercising, particularly when it's a more intense activity. You may believe, or have been told, that it *only* forms when you 'run out of oxygen', that the burning sensation that comes, say, from a long, fast sprint is caused by this lactic acid. You may also believe that the soreness that comes the day

"While Gerschler's Interval Training trains the development of the heart during the recovery intervals – the 'New Interval Training', during the recovery interval, trains the development of the inter-related energy systems' function."

after a hard training session is again caused by lactic acid and that massage will help to get rid of this waste product. From all this you may still believe that lactic acid in the body is very bad news.

The reality is very different. All the old beliefs of how bad lactic acid was are now known to be myths and unfounded. It is not produced just when the body 'runs out of oxygen', it doesn't produce burning sensations and it doesn't produce muscle soreness. Far from being a troublesome waste product, lactic acid or part of it, can help us produce more energy, more quickly. We now know that lactic acid, as such, just does not exist in the body. As soon as it's formed it dissociates, it splits up, into a 'lactate bit' and an 'acidic bit'.

The lactate bit is definitely not a 'bad guy' but is instead a positive and central player in our metabolism and in how we produce energy. Understanding the role of lactate in the body makes it easy to understand why certain types of training we have done in the past have worked so well and how we can now apply this knowledge more precisely to design training sessions, including those using the 'New Interval Training', to really bring about major improvements in performance.

As you are sitting and reading this you are producing lactate, and at the same time you are using it and moving it around the body but you are not building up high levels and so you are not aware of the process. Lactate production within your muscles occurs in healthy, well-oxygenated individuals at all times. Coaches and athletes, however, are not so much concerned with rest as to what happens during exercise and in the recovery from exercise.

During exercise an athlete's lactate level may be assessed by taking a small sample of blood and measuring the concentration of lactate. In the past, these lactate values have sometimes been incorrectly used to make projections on lactate production. Since lactate has the capacity to be both introduced and removed from the blood, the lactate level that we measure at any one time is actually a measure of accumulation

in the blood, not production.

In 1986 this dynamic movement of lactate around the body and its potential to actually produce more energy in the muscle was given the term 'The Lactate Shuttle' by the American physiologist, Dr. George Brooks. It took some time before the importance of Brooks' research was recognised by either other physiologists or coaches. The excitement when I encountered this research in 1994 was because it explained many of the things I had observed, both in my own coaching and from the fluctuating running rhythms of the East African athletes. After first becoming aware of Brooks' research, I introduced the term, 'Lactate Dynamics Training' to specifically classify the training for the lactate shuttle, the dynamic utilisation and clearance of lactate so that lactate is optimally used around the body.

'Lactate Dynamics Training' is any form of training where lactate production is deliberately increased by the intensity of exercise and then alternated with periods of less intense activity. In this way the muscle cells learn how to both use and clear the produced lactate during the less intense recoveries. This alternating of pace produces a massive improvement in running economy, the $\dot{V}O_{2\max}$ and $\text{time}\dot{V}O_{2\max}$, all of which are very strong predictors of performance.

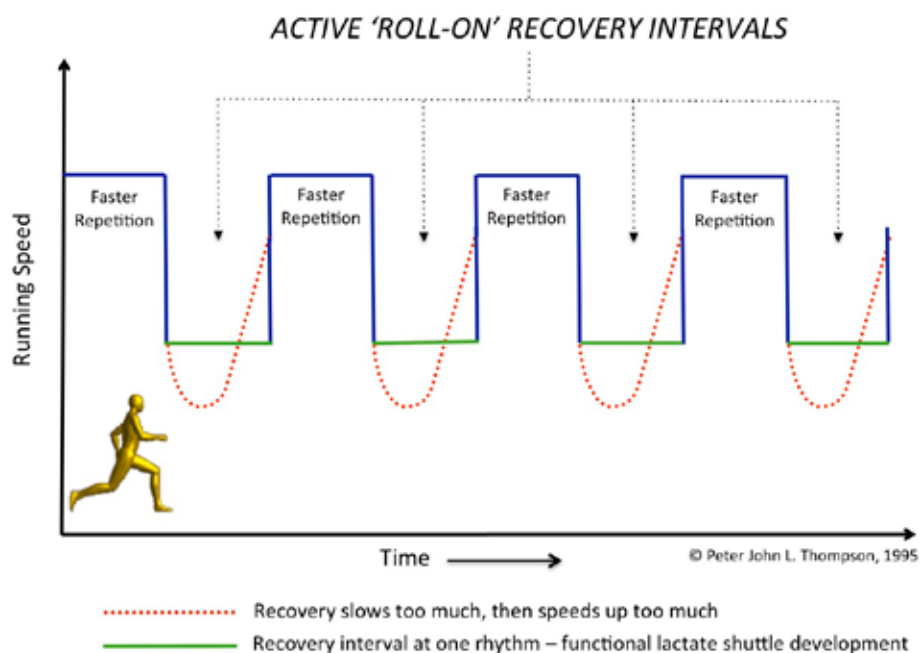
You're probably thinking already, "alternating periods of faster running with periods of slower running" – but that sounds very much like Fartlek training.

Well, you're right on the money. Properly done, Fartlek training is a classic form of 'Lactate Dynamics Training' and trains the lactate shuttle in an environment away from the track. The problem is that the Fartlek done in clubs and by many athletes can be generalised as being too fast on the fast sections and too slow on the slower, recovery sections. This does not train the lactate shuttle very well. If the fast sections were not quite so fast, say about 3000 metres to 10,000 metres pace for a 25-30 minute Fartlek, and the easier sections at 10,000 metres to half marathon and marathon pace, then the lactate shuttle would be better trained. The object is to accumulate some lactate and then in the easier/recovery sections to both use it as fuel and to clear it. For more information on this see the website for 'Fartlek Training'.

If we now take the concept of 'Lactate Dynamics Training' to the track and apply it to our repetition training, we come to the 'New Interval Training', which I introduced in 1995 and where the training effect, as in the classic, original Interval Training, occurs specifically during the interval between the faster runs

The Roll-on Recovery

How might a 'New Interval Training' session with active, roll-on recoveries look in practice? Well let's start by taking any classic repetition training session and make this into a 'New Interval Training' session. Each recovery now becomes clearly defined



The structure of New Interval Training recoveries

as a very active 'roll-on' run *and is as important as the faster repetition*. These roll-ons are not necessarily overly long and are at a pace controlled by the athlete, so that they become more active as the athlete's lactate utilisation and clearance abilities develop.

A recovery of 100m 'roll-on' might be effective for a session, where the athlete goes from the pace of the faster repetition to a consistent, easier speed for the active 100m roll-on. The goal, whether it's an experienced or inexperienced athlete, would be not to slow down suddenly at the end of the faster repetition and then speed up as the next repetition approaches but to transition smoothly and quickly from the pace of the faster repetition to the pace of the active roll-on recovery. At the end of the roll-on recovery there should be an equally smooth and rapid transition back to the faster pace of the 'rep'.

What does 'a very active, roll-on running recovery' really mean in practice to the athlete? To get an idea of this it can be useful to ask an athlete to imagine that they are riding a bicycle. When you are pedalling along it is like being in the faster repetition distance of the session. When you come to the recovery interval it should feel like you stop pedalling – but you do not touch the brakes at all – you just roll on, naturally maintaining the active recovery pace.

This very active 'roll-on', running recovery could be 25" to 35" or more per 100m for a developing or inexperienced athlete. For experienced juniors, seniors and masters athletes, a 100m roll-on may easily and naturally be 25" or less. As the athlete's lactate utilisation and clearance abilities develop their roll-on recoveries will become more active, and faster, naturally.

The roll-on recovery distance in 'New Interval Training' can be 100m, 200m, 300m or any distance that is suitable to the stage of development of the athlete, to provide variety and create different effects on the lactate dynamics, the utilisation and clearance of lactate. Obviously, even the roll-on distance itself can be varied within a session as explained on the website in 'How do I use it?'

Designing and using New Interval Training sessions couldn't be easier, provided you remember to apply certain principles. To convert any Traditional Repetition Training session into a 'New Interval Training' session simply follow these conversion steps:

The 'Roll-on' Recovery
"Imagine you are riding a bicycle. When you are pedalling along it is like being in the faster repetition distance of the session. When you come to the recovery interval it should feel like you stop pedalling – but you do not touch the brakes at all – you just roll on, naturally maintaining the recovery pace."

- Step 1 Introduce active roll-on recoveries in place of passive, inactive recoveries
- Step 2 Reduce the pace of the session by one pace, or keep the pace the same and make the session into smaller sets
- Step 3 Possibly vary the pace of the faster repetition runs in the sets and session to utilise and clear differing amounts of lactate in the roll-on recoveries
- Step 4 Finish each set and the session with an active roll-on recovery.

How might a New Interval Training session look in practice? Well, it might be best to think of an ordinary traditional repetition training session and converting that. Let's start by looking at something like a classic 12 x 400m traditional repetition training session at 3000m pace with a 90 seconds recovery and make this into a 'New Interval Training' session.

Example of a Traditional Repetition Training session

- 12 x 400 (3,000) [90" rest or jog]

Converts to a 'New Interval Training' session

12 x 400 (5,000) [100m r/o] – or better, if you want to maintain pace:

- 3 x 4 x 400 (3,000) [100m r/o and 3' easy running] – or better, if you want to create differing amounts of lactate to utilise and clear:
- 3 x 4 x 400 (400s @ 3,000, 1500, 5,000, 3,000) [100m r/o and 3' easy running]

Now you're ready to turn your existing traditional repetition training sessions into 'New Interval Training' sessions. Once you've done this a few times you will start to design 'New Interval Training' sessions from a blank sheet, bringing in a greater variety of paces and rhythms to your sessions

What is the real evidence that this training is effective?

You may be sitting there, reading this and saying to yourself, "But what is the evidence that this method is effective?" The evidence comes from many, many sources. But let me quote from my own experience from the athletes I have coached in the past, as I was developing this method.

One of the athletes I coached went from an 800m pb of 1:53.2, in 8 months, to run 1:46.5 and in less than a year for the same athlete to run a sub-4 minute mile. Another athlete improved in 9 months from a 3,000m of 8:23 to 7:52 and two years later he ran a marathon in 2:13. An 8:21 steeplechaser wanted to transition to the lucrative road racing scene and ran a 2:10 marathon within two years.

The improvements were not always as quick as these but the improvements were always as profound. The squad of women I coached in 1986 saw seven of them run 5,000m in under 16:00, with three under 15:30. The men's club group I coached developed to have nine go under 30 minutes for 10,000m, with three under 29 minutes. Not earth shattering, you might say but this was improvement from athletes who were not the most naturally gifted. And as I said earlier in this article, those who were gifted achieved world best performances. From all my experience of using the 'New Interval Training', I have yet to find an athlete who does not benefit, and benefit significantly, from this method. Let's examine 'evidence' from another coach.

From 30:58 to 29:18 for the 10,000m in 8 weeks

Here is a quick look at just one other coach's documented experience, that is featured on the website. Jasson Begashe is an IAAF Academy coach who carried out a study comparing the effectiveness of 'New Interval Training' with Traditional Repetition Training. The study was conducted in Babati Town in the Manyara Region of Tanzania at an altitude of 1370m from October to December 2007 (8 weeks). Babati Town lies in the Rift Valley 167 kms south west of Arusha and the area is the origination of most of the elite long distance runners from Tanzania such as Gidemes Shahanga, Simon Naali, Nada Saktay, Frances Naali and Fabian Koseph.

Jasson Begashe's study demonstrated that all athletes in a 'New Interval Training'

group improved their performance significantly better than a traditional repetition training group, even though they all had similar qualities as Chronological Age, Developmental Age and Training Age; were from the same physical and economic environment and were participating in the same events of 10,000m to marathon.

The study examined two groups, each of three athletes, selected from the athletes he coached and who normally trained together. Group A were assigned as the "New Interval Training" group and Group B the 'Traditional Repetition Training' group. The two groups carried out their Group A or Group B training twice a week for 8 weeks, giving a total of 16 sessions over the 8 weeks period. All their other training during these 8 weeks was together as one group.

A typical Group A 'New Interval Training' session was 3 x 5 x 400 (3k) [100m r/o and 800m r/o]. This means that they did 3 sets of 5 x 400m at 3,000m pace. The recovery interval was an active roll-on recovery over 100m which turned out to be at approximately 10km pace for this study. The recovery between the sets was 800m active roll-on which was again at approximately 10km pace. Group B would do exactly the same session on every occasion but with passive inactive recoveries of 60 – 90 seconds between repetitions and 4 minutes between the sets.

At the end of 8 weeks all six athletes competed in the Tanzania National 10Km Road Championships. Jasson identified the best responding athlete from each group as representative of the underlying trend and these are shown graphically above. Malak Ole Mang'era after having been 'stuck' at around 31 minutes for 10km for 4 years improved dramatically in 8 weeks to lower his personal best to 29:18. In his concluding remarks, Jasson states, "It is evident from the present study that engagement of active recovery methods in the 'New Interval Training' can better enhance athletes' performance. This study therefore, recommends this method over the traditional repetition training method with passive / no activity recoveries."

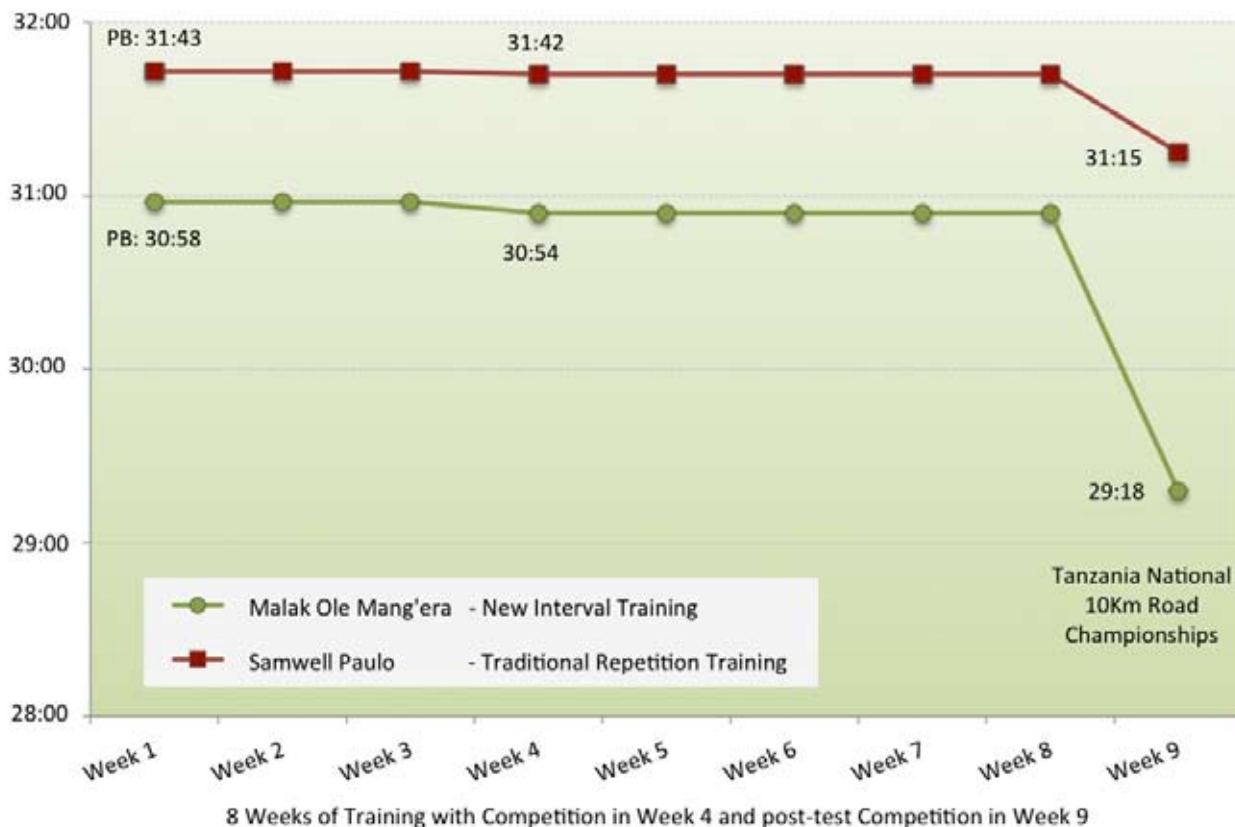
Back at the athletics track, where we first started, the two coaches are speaking together again. The older coach's athletes are just completing some maximal 300m reps and are visibly struggling over the final 40 metres. He turns to his perceived junior and says, "See, they're wallowing in 'a sea of lactic acid', they need this work to learn how to tolerate the 'lactic'". The other coach responds somewhat hesitantly, knowing previous responses, "I can see they're 'wallowing' but it's not in lactic, it's the acidosis that has built up. The lactate actually helped them to get this far." Looking somewhat bemused the older coach

"It is evident from the present study that engagement of active recovery methods in the 'New Interval Training' can better enhance athletes' performance.

This study therefore, recommends this method over the traditional repetition training method with passive / no activity recoveries."

says with finality, "You know you do come out with the most ridiculous theoretical stuff. When you've been coaching as long as I have ..." And, at that the two coaches parted to rejoin their athletes, both shaking their heads.

This article has been an introduction to a new, systematised method of training. If you are interested to learn more please visit the non-commercial website www.newintervaltraining.com Try the 'New Interval Training' for yourself. Try making recoveries more dynamic, and the whole session more rhythmic, dictated by the perception of pace, rather than slavishly following a stopwatch. As you do, the ability to judge pace and run at various rhythms will improve but, most importantly, with this 'New Interval Training' your competitive performances will really take off.



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L Thompson
2011

An 8-week comparison of the effectiveness of 'New Interval Training' (lower round markers) vs. Traditional Repetition Training (upper square markers)

UK Senior Rankings

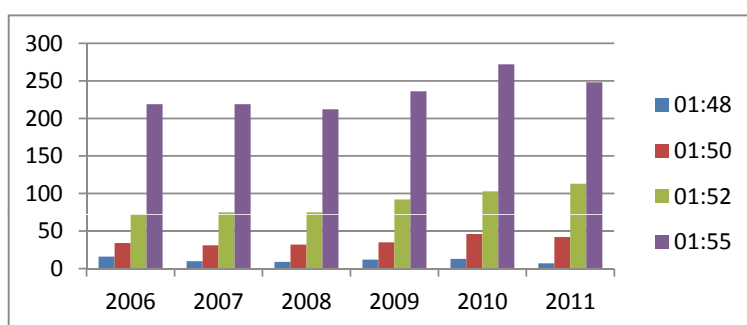
BY TIM BRENNAN

(Number of performances under mm:ss)

A comparison of the UK rankings since 2011 can give us an idea of how events are progressing. Highlighted in yellow is the time required for each event to gain entry to the UK championship and trials. Significant trends can be seen in a general rise in depth for the men's 800m and 1500m with 2010 and 2011 both being strong years. In comparison the women's equivalent events are at their strongest in 2009. For the 5000m both men and women's events are generally stronger in 2011 than they were at the start of the period.

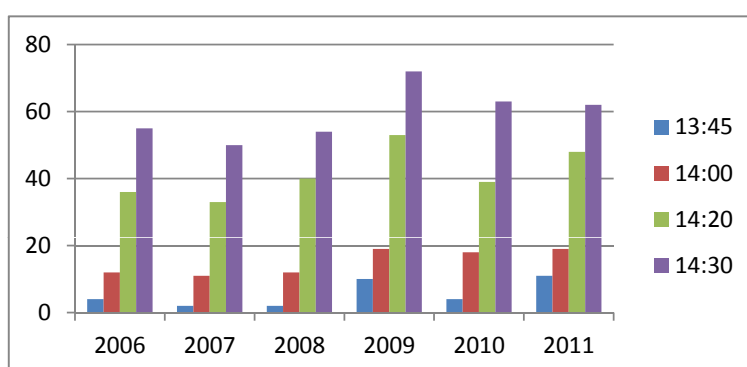
800m

	1:48	1:50	1:52	1:55
2006	16	34	72	219
2007	10	31	75	219
2008	9	32	75	212
2009	12	35	92	236
2010	13	46	103	272
2011	7	42	113	248



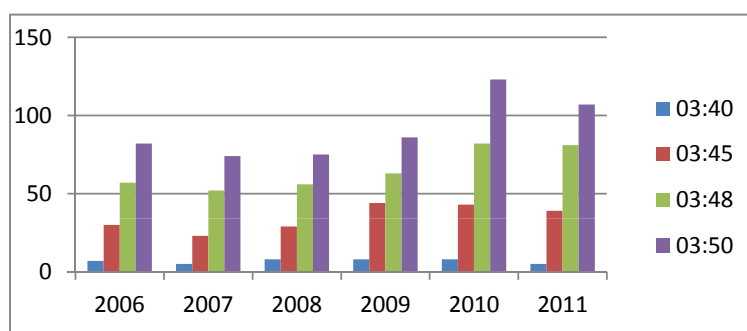
5000m

	13:45	14:00	14:20	14:30
2006	4	12	36	55
2007	2	11	33	50
2008	2	12	40	54
2009	10	19	53	72
2010	4	18	39	63
2011	11	19	48	62



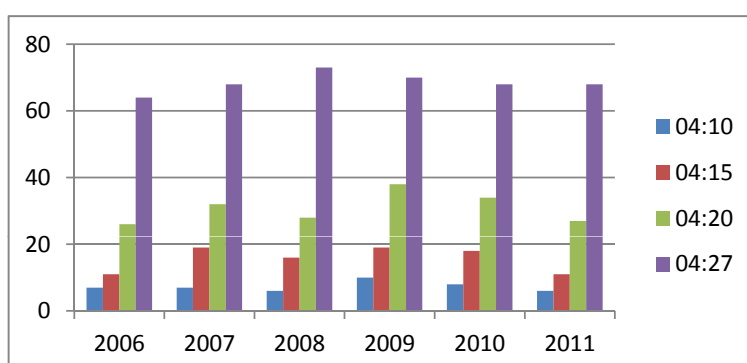
1500m

	3:40	3:45	3:48	3:50
2006	7	30	57	82
2007	5	23	52	74
2008	8	29	56	75
2009	8	44	63	86
2010	8	43	82	123
2011	5	39	81	107



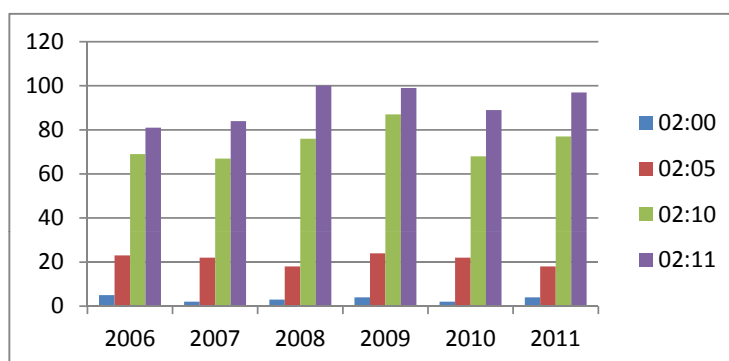
W800m

	2:00	2:05	2:10	2:11
2006	5	23	69	81
2007	2	22	67	84
2008	3	18	76	100
2009	4	24	87	99
2010	2	22	68	89
2011	4	18	77	97



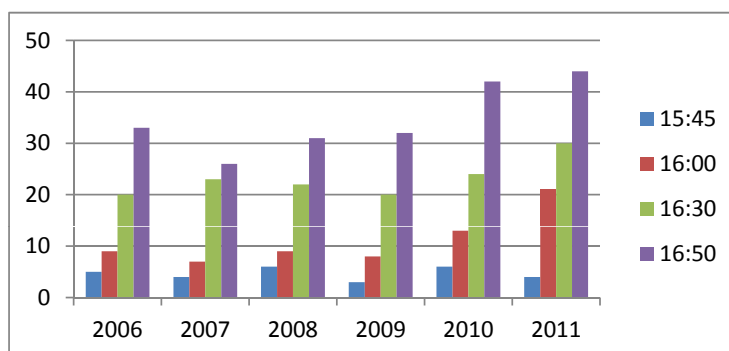
W1500m

	4:10	4:15	4:20	4:27
2006	7	11	26	64
2007	7	19	32	68
2008	6	16	28	73
2009	10	19	38	70
2010	8	18	34	68
2011	6	11	27	68



W5000m

	15:45	16:00	16:30	16:50
2006	5	9	20	33
2007	4	7	23	26
2008	6	9	22	31
2009	3	8	20	32
2010	6	13	24	42
2011	4	21	30	44



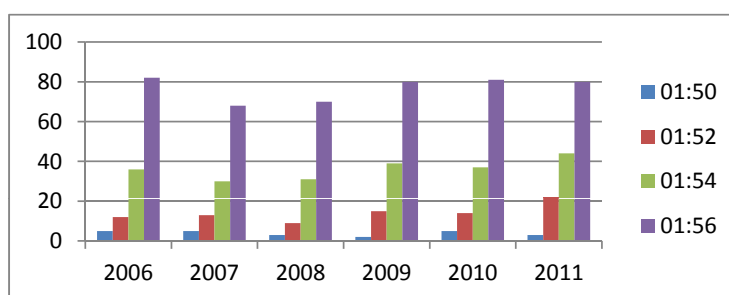
UK Junior Rankings

(Number of performances under mm:ss)

In the Junior events the men's 800m and 1500m were strong events and are generally better in depth in the last three years than they were in the first. The women's events like the senior age group was stronger in 2009 than it is today. The 5000m has less Juniors running it and there are too few women in the rankings to make an analysis possible. For the men 2011 was a pretty average year.

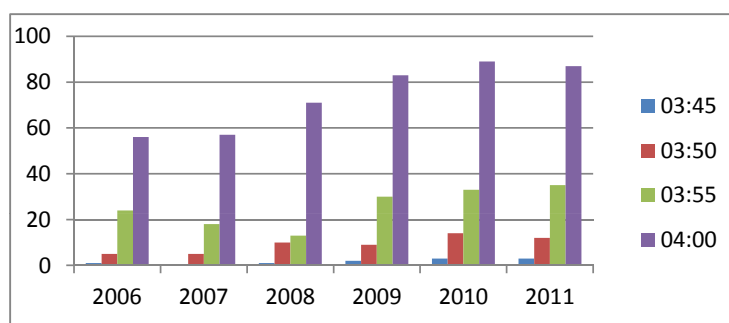
800m

	01:50	01:52	01:54	01:56
2006	5	12	36	82
2007	5	13	30	68
2008	3	9	31	70
2009	2	15	39	80
2010	5	14	37	81
2011	3	22	44	80



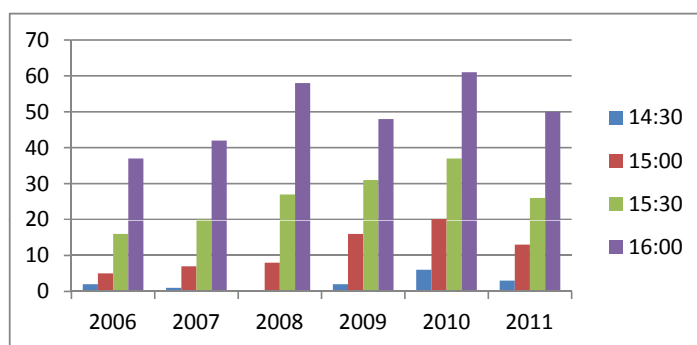
1500m

	03:45	03:50	03:55	04:00
2006	1	5	24	56
2007	0	5	18	57
2008	1	10	13	71
2009	2	9	30	83
2010	3	14	33	89
2011	3	12	35	87



5000m

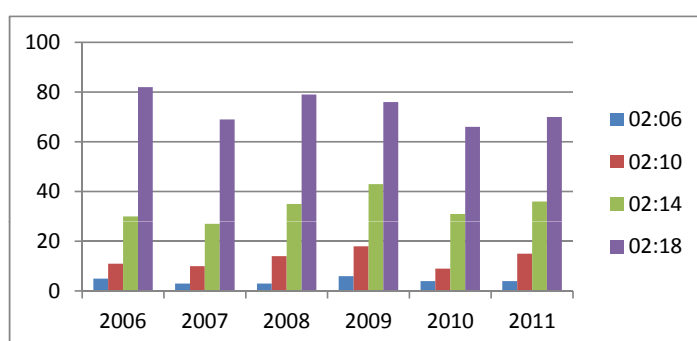
	14:30	15:00	15:30	16:00
2006	2	5	16	37
2007	1	7	20	42
2008	0	8	27	58
2009	2	16	31	48
2010	6	20	37	61
2011	3	13	26	50



Adam Cotton (137) on his way to winning the B 1500m at Manchester

W800m

	02:06	02:10	02:14	02:18
2006	5	11	30	82
2007	3	10	27	69
2008	3	14	35	79
2009	6	18	43	76
2010	4	9	31	66
2011	4	15	36	70



W1500m

	04:20	04:28	04:36	04:45
2006	5	12	29	58
2007	5	11	31	58
2008	3	16	36	70
2009	6	18	35	72
2010	2	11	30	61
2011	1	9	28	61



BMC Grand Prix 2011 Report

STEVE MOSLEY AND TIM BRENNAN

Once again the BMC Grand Prix was part of the McCains UK Challenge which provided valuable sponsorship alongside our kit sponsors Nike.

The 2011 Grand Prix series had record numbers of participants. There was a shift away from 800m and 1500m events towards 5000m. Sport City saw four 5000m races for Men, as did Solihull, while there were three races at the final. For comparison purposes for the total number of finishers table 2008 was the year when we ran 6 meetings, while all other years followed the normal five meeting formats.

Number of finishers in 800m/1500m and Endurance events

	1997	1998	1999	2000	2001	2002	2003	2004
Men	438	517	610	546	563	672	716	562
Women	146	212	255	229	233	284	345	328
Total	584	729	865	775	796	956	1061	890
Endur.					235	233	210	201
Overall	584	729	865	775	1031	1189	1271	1091

	2005	2006	2007	2008	2009	2010	2011
Men	655	658	675	744	724	686	683
Women	379	367	382	434	398	289	371
Total	1034	1025	1057	1178	1122	975	1054
Endur.	276	252	280	364	311	280	388
Overall	1310	1277	1337	1542	1433	1255	1442



Stuart Stokes rolls back the years to win the Birmingham Grand Prix Final Steeplechase



Robin Schembera (Germany) just prevails from Gareth Warburton – both on the far left - in a blanket finish in the Men's international Grand Prix 800m at Watford



European Cup representative Charlene Thomas was a dominant winner of the Women's 1500m Grand Prix at Watford



Helen Hofstede (Netherlands) leads Kerry Harty (Ireland) in the early stages of the Birmingham Ladies Steeplechase

Strength in depth – Totals of sub-1:50, sub-3:45, sub-2:10 & sub-4:20

	1997	1998	1999	2000	2001	2002	2003	2004
Men	58	50	72	64	49	51	70	58
Women	34	43	45	50	50	49	63	70
Total	92	93	117	114	99	100	133	128

	2005	2006	2007	2008	2009	2010	2011
Men	69	54	103	77	95	96	95
Women	103	79	111	105	112	107	134
Total	172	133	214	182	207	203	229

In 2011 we invested an increase amount of time and money in the Watford International meeting. A high standard of overseas athlete was attracted to the meeting but due to a combination of factors the winning times were a bit below what we had anticipated. However the lessons learnt and contacts made will be very helpful in 2012.

Throughout the 15 years of the Grand Prix we have seen a steady rise in the number "Gold standard" times achieved (Sub-1:50, sub-3:45, sub-2:10 & sub-4:20) which continued in 2011.

Strength in depth – 5000m Totals of sub-14:30, sub-16:30,

	2008	2009	2010	2011
Men	61	58	70	79
Women	14	22	30	25
Total	75	80	100	104

Personal Bests

Last year's Grand Prix PB rate was 38% - which settled back this year to 34%

	Venue	Races	Finishers	PB's	%
GP1	Sports City	28	306	127	42%
GP2	Watford	28	344	122	35%
GP3	Solihull	27	301	90	30%
GP4	Trafford	26	251	81	32%
Final	Birmingham	26	240	72	30%
	TOTAL	135	1,442	492	34%



Claire Gibson and Rose Anne Gallgan lead eventual winner Lynsey Sharp (95) in the Ladies 800metres A race at Watford



Joe Thomas (5) wins the Solihull Grand Prix from Andreas Bube (Denmark)

Outside of the grand Prix series we are doing very well in producing athletes PB's. As shown on the front of the BMC website.

Meetings: 47	Races: 427	Finishers: 4,166	PBs: 1,706 (41%)
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The PB figures can be broken down as

	Meetings	Races	Finishers	PBs	Percent
GP	5	135	1,442	492	34%
Gold Standard	15	71	685	269	39%
Regional	24	155	1,403	663	47%
PB Classics	3	66	636	282	44%
TOTAL	47	427	4,163	1,706	41%

The 2011 Racing Program

BMC Members' Record - by a paid-up BMC member in a BMC race

Junior Men

1500m	03:41.33	Adam Cotton	Watford
5000m	13:57.16	Jonny Hay	Sport City

BMC Record - by anyone in a BMC Race

Junior Men

3000m SC	8:42.18	Dacha Abdellah MOR	Watford
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Junior Women

1500m	4:07.45	Ciara Mageean IRL	Birmingham
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Ciara Mageean just edges Jemma Simpson in the Women's 1500m Grand Prix Final in Birmingham

World Championship B Standard (First 4 fixtures)

M800m Standard 1:46.3 - Andrew Osagie 1:45.63

W1500m Standard 4:08.9 - Charlene Thomas - 4:06.7

Marrilyn Okoro ran a B standard in the Watford GS meeting of 2:00.60

European U23 Championship Standard (First 2 Fixures) - 13 qualifications

European U20 Championship Standard (First 2 Fixtures) -13 qualifications



Steve Mitchell a convincing winner of the Men's 1500m Grand Prix at Solihull

Best Performances comparison over last 4 years

Event	Men	Event	Women
800m	2008 - 1:47.06 - Rajeev Ramesan (India) 2009 - 1:46.95 - Mattias Claeson (Swe) 2010 - 1:47.44 - Gareth Warburton 2011 - 1:45.63 - Andrew Osagie	800m	2008 - 2:00.49 - Vicky Griffiths 2009 - 2:01.34 - Claire Gibson 2010 - 2:01.66 - Emma Jackson 2011 - 2:02.48 - Lynsey Sharp
1500m	2008 - 3:37.6 - Moses Kipsiro (Uganda) 2009 - 3:38.01 - Bethwell Birgen (Ken) 2010 - 3:38.70 - Colin McCourt 2011 - 3:40.01 - David Bustos (Spain)	1500m	2008 - 4:09.29 - Steph Twell 2009 - 4:07.94 - Katrina Wootton 2010 - 4:09.86 - Charlotte Browning 2011 - 4:06.87 - Charlene Thomas
3000m	2008 - 7:59.81 - James Nolan (Ireland) 2009 - 7:53.52 - Linus Chumba 2010 - 8:05.02 - Dan Mulhare 2011 - 7:55.73 - James Wilkinsom	3000m	2008 - 9:04.21 - Nicola Gauld 2009 - 9:11.78 - Juliet Doyle 2010 - 8:56.89 - Liz Maloy (USA) 2011 - 9:12.66 - Naomi Taschimowitz
5000m	2008 - 13:45.35 - Andy Vernon 2009 - 13:34.36 - Moumin Geele 2010 - 13:42.6 - Mati Rasanen (Finland) 2011 - 13:37.41 Mumin Gala	5000m	2008 - 15:45.61 Preeja Streedharan (India) 2009 - 15:44.37 - Feya Murray 2010 - 15:23.40 - Charlotte Purdue 2011 - 15:38.25 - Sabine Fischer (Ger)
10000m	2008 - 28:22.79 - Surendra Singh (India) 2009 - N/A 2010 - 29:46.47 - Paul Martelletti (NZ) 2011 - 29:43.87 - Paul Martelletti (NZ)	10000m	2008 - 31:56.90 - Jo Pavey 2009 - N/A 2010 - 32:36.75 - Charlotte Purdue 2011 - 33:09.50 - Hannah Walker
3000m Chase	2008 - 8:27.40 - Andy Lemoncello 2009 - 8:49.60 - Bruce Raeside 2010 - 8:34.06 - Stuart Stokes 2011 - 8:36.87 - Stuart Stokes	3000m Chase	2008 - 11:18.72 - Emily Brown 2009 - 10:38.37 - Sara Luck 2010 - 9:55.4 - Fionnuala Britton (Ireland) 2011 - 9:58.61 - Helen Hofstede (Holland)

2 Hour Marathon

BY BRENDON BYRNE

Just before the London Marathon this year there was programme on BBC radio speculating on the possibility of the two hour marathon being run. The consensus seemed to be that the feat is possible but it may take quite a few years until this is achieved. In fact the now ex holder of the world's fastest time, Haile Gebrselassie said "It might take another twenty five years but it will happen".

There have been `barriers` to performances before and the most famous one was the four minute mile. Before Roger Bannister first achieved this at Oxford in 1954 many pundits had come to the conclusion that this was impossible to achieve. Since then over a thousand athletes have broken the sub four minute mile and greater numbers have achieved the 1500m equivalent of about 3 minutes 42 secs. However, the sub two barrier for the marathon may well prove to be a formidable one.

In the 2011 London Marathon Emmanuel Mutai won in a London record of 2 hours 4 minutes 40 secs. He looked pretty good doing it puts him 5th on the world all time list. (See Table 1) To beat two hours an athlete would need to run nearly 11 seconds

per mile faster than Mutai. The two hour marathon would be run at a speed of 4 minutes 35 secs per mile or to put it another way, not a long way outside 14 minutes for each 5km split

It is very easy to criticise British distance running performances and many have. It is a curious point that numbers competing in the London marathon have increased to well over 30,000. In addition, the number of sports science graduates has also increased in the last thirty years. This is not matched by an improvement at the top end of performances. It is certainly not a case that the greater number of competitors results in a higher standard. Of the top British performances of all time only Steinlie's performance has happened in the last decade and some of the top 10 performances go back 40 years! Charlie Spedding is the last British athlete to win an Olympic medal in the event in 1984. John Brown has finished 4th in two Olympic marathons. It is also fair to say that the trend in the last twenty years at least has been for the Olympic event to be held in quite hot conditions that are not conducive to fast times anyway. Is it about time that there were some more recent additions to the

British top ten?

Clearly the sub 2 hour marathon would be an absolutely phenomenal performance. It would have to be achieved with excellent pace making, but come to think of it there still aren't a great number of sub 60 minutes half marathoners around. It would have to be on a flat, fast course and venues such as Berlin, Rotterdam and Chicago come to mind. The weather conditions would have to be perfect with a temperature in the region of 12 - 14 degrees. The athlete would probably have been capable of a sub 12 minutes 50 secs 5000m. Of course there would also be a big financial incentive for the athlete concerned too.

The women's marathon is a different matter. It first appeared in the Olympic programme as recently as 1984. Paula Radcliffe set the standard with the three fastest times in history. It would seem that her time in London of 2 hours 15 minutes 25 secs set in 2003 is proving difficult for other athletes to approach at present. Despite this being a relatively new event for women some of the best British performances go back to the 1980's.

Paul Evans has been one of Britain's



The current world record holder Patrick Makau

Table 1
Marathon all time best performances:

Patrick Makau	(Kenya)	Berlin 2011	2 hours 3 mins 38 secs
Haile Gebrselassie	(Ethiopia)	Berlin 2009	2 hours 3 minutes 59 secs
Duncan Kibet	(Kenya)	Rotterdam 2009	2 hours 4 mins 27 secs
James Kipsang Kwambai	(Kenya)	Rotterdam 2009	2 hours 4 mins 27 secs
Emmanuel Mutai	(Kenya)	London 2011	2 hours 4 mins 40 secs
Geoffrey Mutai	(Kenya)	Rotterdam 2010	2 hrs 4 mins 55 secs
Paul Tergat	(Kenya)	Berlin 2003	2 hrs 4 mins 55secs
Sammy Korir	(Kenya)	Berlin 2003	2 hrs 4 mins 56 secs
Wilson Kipsang	(Kenya)	Frankfurt 2010	2hrs 4mins 57secs
Abel Kirui	(Kenya)	Rotterdam 2009	2 hrs 5 mins 4 secs
Samuel Wanjiru	(Kenya)	London 2009	2 hrs 5 mins 10 secs
Martin Lel	(Kenya)	London 2008	2 hrs 5 mins 15 secs
Tsegay Kebede	(Ethiopia)	Fukuoka 2009	2 hrs 5 mins 18 secs

Note: Geoffrey Mutai (Kenya) 2hrs 3mins 2 secs
Moses Mossop (Kenya) 2hrs 3mins 6 secs
Gebre Gebremariam (Ethiopia) 2hrs 4 mins 54 secs
and Ryan Hall (USA) 2hrs 4 mins 58 secs

These performances were achieved at Boston on 18th April with a tail wind and a drop of 139 metres on the course

fastest marathon runners and has some interesting views on the current state of marathon running in Britain. He is still 4th on the all time British list and finished 3rd 4th and 5th in the London Marathon. He also ran 27 minutes 46 secs for 10,000m and ran under 28 minutes on six occasions. In 1992 he finished 5th in the London marathon in 2hrs 10 minutes 36 secs and was only picked as non travelling reserve for the Olympic games in Barcelona. "Today I would have been picked for the Olympics straight away with a time like that". He was actually picked for the 10,000m and made the final. Yes, there were heats for the event in Barcelona.

Why aren't we getting better performances? "Too many athletes are running in their comfort zones", Evans feels. With reference to the huge number

of runners in the London Marathon and events such as the Great North Run he says "We are becoming a nation of recreational runners". As part of his job working for Active Norfolk he visits a number of running clubs and feels that athletes are not training hard enough or fast enough. "They are not doing enough tempo running" Evans maintains.

Interestingly he feels that we are not making use of the experiences and achievements of the runners who have been successful in the past. "We have a tradition of successful distance runners and this includes Brendan Foster, Dave Bedford and Mick McLeod. Many of the athletes in the top ten marathon list are not being made use of and they have a huge amount to offer". These are interesting points that Evans makes.



Paula Radcliffe's world record time of 2:15:25 remains untouched

Table 2
British marathon bests of all time

Steve Jones	2 hrs 7 mins 13 secs	1985
Charlie Spedding	2 hrs 8 mins 33 secs	1985
Richard Nerurkar	2 hrs 8 mins 36 secs	1997
Paul Evans	2 hrs 8 mins 52 secs	1996
Geoff Smith	2 hrs 9 mins 8 secs	1983
Ian Thompson	2 hrs 9 mins 12 secs	1974
Allister Hutton	2 hrs 9 mins 16 secs	1985
Mark Steinle	2 hrs 9 mins 17 secs	2002
Hugh Jones	2 hrs 9 mins 24 secs	1982
Ron Hill	2 hrs 9 mins 28 secs	1970

Note the excellent run of Scott Overall in Berlin recently. He finished 5th in 2hours 10 minutes 55 seconds.

Table 3
Women's marathon best all time performers

Paula Radcliffe	(GB)	2 hrs 15 mins 25 secs	2003
Liliya Shobukhova	(Russia)	2 hrs 18 mins 20 secs	2011
Catherine Ndereba	(Kenya)	2 hrs 18 mins 47 secs	2001
Mizuki Noguchi	(Japan)	2 hrs 19 mins 12 secs	2005
Mary Keitany	(Kenya)	2 hrs 19mins 19 secs	2011
Irina Mikiyenko	(Germany)	2 hrs 19 mins 19 sec	2008
Deena Kastor	(USA)	2 hrs 19 mins 36 secs	2006
Sun Yingjie	(China)	2 hrs 19 mins 39 secs	2003
Yoko Shibui	(Japan)	2 hrs 19 mins 41 secs	2004
Florence Kiplagat	(Kenya)	2 hrs 19 mins 44 secs	2011
Naoko Takahashi	(Japan)	2 hrs 19 mins 46 secs	2001
Zhou Chunxiu	(China)	2 hrs 19 mins 51 secs	2006



Jeff Hunt (AUS), Dave Webb and Lee Merrien during the men's marathon at Daegu

Table 4
UK womens best all time performances

Paula Radcliffe	2 hrs 15 mins 25 secs	2003
Mara Yamauchi	2 hrs 23 mins 12 secs	2009
Veronique Marot	2 hrs 25 mins 56 secs	1989
Priscilla Welch	2 hrs 26 mins 51 secs	1987
Liz McColgan	2 hrs 26 mins 52 secs	1997
Sarah Rowell	2 hrs 28 mins 06 secs	1985
Liz Yelling	2 hrs 28 mins 33 secs	2008
Sally-Ann Hales	2 hrs 28 mins 38 secs	1985
Kathy Butler	2 hrs 28 mins 39 secs	2006
Marian Sutton	2 hrs 28 mins 42 secs	1999
Jo Pavey	2 hrs 28 mins 44 sec	2011

Iron Deficiency in Athletes

BY THOMAS ROWLAND, MD

The following is an over view presented by Dr. Thomas Rowland at the recent European Endurance Conference which incorporated the BMC Conference. Here Dr. Rowland looks at whether iron is as important to endurance athletes as is commonly believed.

Importance of Iron for Health.

- Immune function
- Temperature regulation
- Cognitive abilities
- Efficiency of energy metabolism
- Working capacity
- Sports performance

The important questions

What is the clinical definition of significant iron deficiency in athletes?

What are appropriate strategies for screening athletes for iron deficiency?

What are the indications for iron treatment?

Note:

Serum ferritin levels are a marker of body iron storage status.

Normal values are higher in males (~90 ng/ml) compared to females (25-30 ng/ml).

Significant depletion of iron stores is indicated by a value less than 12-20 ng/ml.

Iron is important for endurance exercise performance through three functions

- Formation of hemoglobin for oxygen transport in the blood
- Energy metabolism in muscle cells
- Optimizing mental functioning

Therefore:-

- Significant iron deficiency results in a fall in blood concentration of hemoglobin, with a decreased oxygen transport to exercising muscle.
- Iron deficiency anemia is defined as a hemoglobin concentration of less than 12 gm/dl in females and less than 13 gm/dl in males.

Anemia (fall in hemoglobin) is a late manifestation of iron deficiency, and it is possible to have significant depletion of iron stores without iron deficiency anemia.

- Normal Hb > 12 gm/dl females, > 13 gm/dl males ferritin > 12-20 ng/ml
- Nonanemic iron deficiency Hb > 12 gm/dl females, > 13 gm/dl males ferritin



<12-20 ng/ml

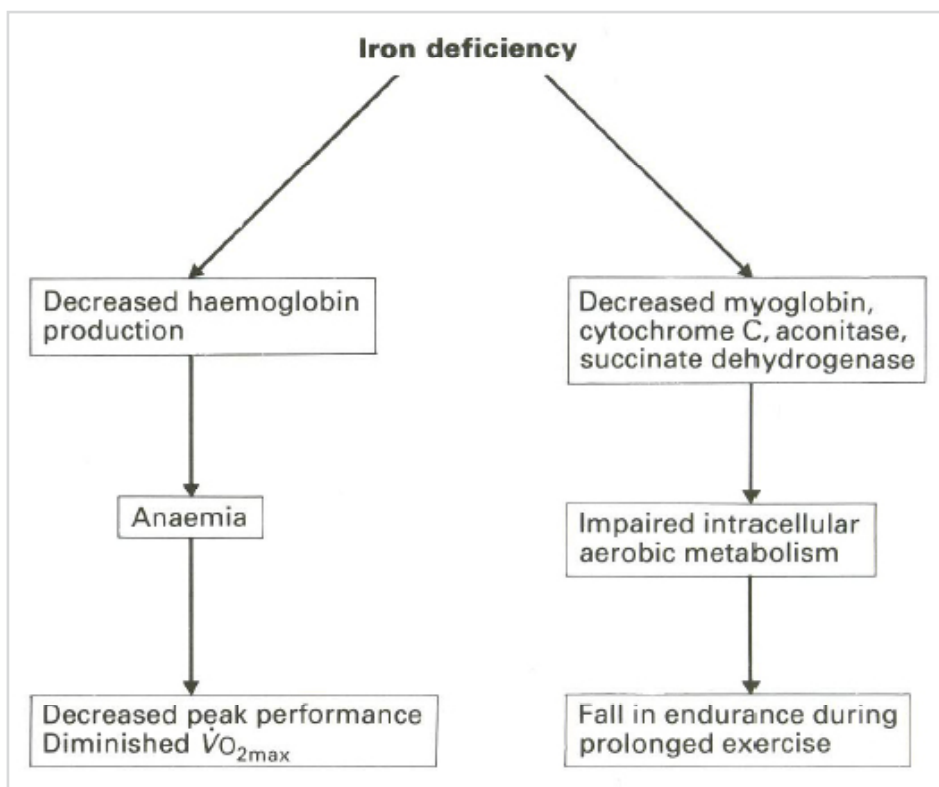
- Iron deficiency anemia Hb < 12 gm/dl females, < 13 gm/dl males ferritin < 12-20 ng/ml

How common is iron deficiency among athletes?

Iron deficiency anemia (low Hb, low ferritin) is very uncommon in athletes. Most studies show a frequency of 0-2%. This is probably similar to that in the general population

However, non-anemic iron deficiency (normal Hb, low ferritin) is frequently seen in athletes, particularly females (25-45%). (Menstruation etc)





Causes of iron deficiency in athletes

- High frequency in the general population
- Gastrointestinal bleeding
- Hematuria – blood cells in total volume of blood
- Iron losses in sweat
- Increased breakdown of red blood cells

Note Therefore:-

- Iron deficiency severe enough to cause anemia (fall in hemoglobin) clearly depresses exercise capacity.
- Does nonanemic iron deficiency (low ferritin with normal hemoglobin) lower performance?

Should athletes undergo routine screening for iron deficiency (hemoglobin, ferritin levels)?

High risk groups:

1. Female endurance athletes
2. Those with unexplained decreased performance
3. Vegetarians
4. Athletes with a prior history of iron deficiency

Among colleges in the U.S., 40% report some form of routine screening of athletes for iron deficiency, particularly females.

Who should be treated with oral iron supplementation?

- Iron deficiency anemia
- Non-anemic iron deficiency (ferritin <12-20 ng/ml)

Arguments: may predispose to anemia, may affect performance

Oral iron supplementation:

- 100 mg elemental iron daily in divided doses for 2-3 months during the training season with follow-up ferritin determination
- Dietary changes, vitamins with iron ineffective

Why not just take iron?

The female athlete's argument:

1. Non-anemic iron deficiency is common
2. Animal research indicates this depresses performance
3. Definitive study not done in humans

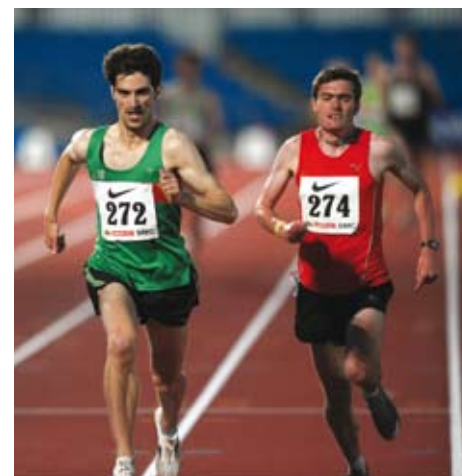
Petruczi et al. (2007) by questionnaire, 30% of highly competitive female athletes in the UK take iron.

Risks of iron supplementation?

- Gastrointestinal side effects
- Decreased mineral absorption (copper, zinc)
- Risk with inherited iron storage diseases(hemochromatosis)
- Risk of cancer, heart disease

CONCLUSIONS:-

- Adequate body iron stores, as measured by blood ferritin levels, are critical for optimizing athletic performance.
- Severe iron deficiency resulting in anemia (low Hb) is uncommon in athletes, but non-anemic iron deficiency is frequent, particularly in females (25-40%).
- The performance implications of non-anemic iron deficiency are uncertain.
- Routine screening for Hb and ferritin levels may be indicated for high risk groups.
- Some advocate iron treatment for athletes with non-anemic iron deficiency.
- Unmonitored ("blind") supplementation with oral iron by athletes is considered inappropriate.



IRON CONTENT OF SOME COMMON FOODS

Food	Serving size	Iron content (mg)
Beef, lean	3 oz	3
Turkey	3.5 oz	2
Chicken	3.5 oz	1
Lentils, cooked	0.5 cup	3
Beans/Legumes	1 cup	3-5
Tofu, firm	0.5 cup	3
Spinach, cooked	0.5 cup	3
Molasses, blackstrap	1tbs	3
Tomato puree	0.5 cup	2

Coaches Voice on UK Members Council

BY MIKE HARRIS

When reflecting on such a performance as Andrew Osagie's breakthrough 1-45 clocking at the BMC Grand Prix at Stretford on a warm, sunny but breezy Saturday evening, I often find myself analysing it from a coaching perspective.

Who is the athlete's coach? What other athletes does that coach look after? What is that person's coaching philosophy? And, most importantly of all, what assistance does that coach need to ensure that he/she can do everything possible to help their athlete achieve their goal?

In this particular instance, Osagie's coach, Craig Winrow, is in a fortunate position to help him achieve his international goals and Osagie's subsequent performances at Crystal Palace and in Daegu indicate he is on the right path.

But what if you had an athlete who made a breakthrough? It maybe lower down the athletic scale i.e. winning an Area title, making the UK Champs, selection for an England team. It maybe with younger athletes who can make such rapid improvements they are selected for a GB team and you are suddenly left wondering if you should do things differently or perhaps feeling you may not have the appropriate experience.

The coaching structure in the UK has undergone massive changes over the last few years; Coach Education has been totally revamped with new types of qualification on offer; Coach Development is now high-profile with Masterclasses galore, national & area coaching conferences, the National Coach Development Programme (NCDP), the Local Coach Development Programme (LCDP) & Flying Coaches; and we now have National Event Coaches, National Coach Mentors (NCMs) and, in endurance only, Area Coach Mentors.

All these areas are there to help improve our coaches. But it's not a perfect world. Coaching course costs can be high, there is a lot of studying involved, written diaries have to be produced. Conferences are not always at a convenient time or place and you may be wary of joining the LCDP or speaking with the national/area mentors.

For the last four years I have been the

coaches' elected representative on the UK Members Council. The UKMC is the body that oversees the governance of athletics in the UK – by that it means overseeing everything the UKA Board does and, if necessary, offering comment, expressing concern or support, ensuring the issues of the day are addressed and having the ability to either raise coaching issues at the highest level or, alternatively, passing on information down to the grassroots level.

It meets formally four times a year and is chaired by UKA President Lynn Davies. There are other volunteer representatives from officiating, road-running, clubs etc (including Bill Adcock's former Olympic Marathon runner who still officiates at the BMC National Grand Prix) as well as Ed Warner & Niels De Vos who attend in their capacity as Chairman & Chief Executive respectively of UKA. Both Kevin Tyler, UKA Head of Coaching & Richard Wheeler, England Athletics Head of Coach Development have attended in the past.

My main objective is to ensure that, as much as possible, I represent the views of the coaching fraternity. Being a volunteer, this can be difficult in terms of communicating with the thousands of coaches in the UK but I do attend many meetings all year round where I can begin to get a feeling for what the hot topics are.

So I am always available to discuss issues, pass on information, offer advice where I can and, importantly, listen.

So if you are a coach who wants to better yourself as your athletes get better but you're not sure what's right for you or there are obstacles in your way, then please feel free to contact me.

I'm based in the North but if you aren't able to see me in person I can also be contacted via email at mharris@uka.org.uk



Mike Harris

Mel Batty

The British Milers Club was greatly saddened to hear of the recent death of Mel Batty.

Mel made a huge contribution to the sport as both an athlete and a coach, and his personality gained him many friends across the sport.

Mel's successes as an athlete included medals at the International Cross Country Championships (forerunner to the World Cross Country) with a silver medal in 1965. His run saw him finish ahead of the likes of Mohamed Gammoudi as he came incredibly close to taking gold - he was given the same time as winner Jean Fayolle of France. You can see Pathe footage of the race <http://pathedev.bigeyedeers.co.uk/video/belgian-international-cross-country-aka-belgium-cr/query/mel+Batty>

Mel also won bronze at the International Cross Country Championships in 1962. He was a great competitor at cross country. He was National Cross Country Champion in 1964 and 1965 representing Thurrock. In both of those years he also won the Southern Cross Country title that he had also won in 1962. To see Pathe footage of his win at the 1965 National held at Parliament Hill. <http://pathedev.bigeyedeers.co.uk/video/thousand-in-cross-country-championship-aka-mel-bat>

On 11 April 1964 Mel made his way into the world record books at 10M. He won the AAAs championship in a time of 47:26.8 retaining the title he had won a year early and setting world record figures. Mel was a prolific racer at a range of distances – he had come third in the AAA Marathon Champs in 1962.

Mel went on to work in the sport and was also a successful coach. He coached Eamonn Martin – the last British man to win the London Marathon in 1993. He was involved in giving advice and encouragement to many people, including as a speaker at England Athletics development events.

But as well as the impression made by his successes in the sport Mel's personality, love of life and huge enthusiasm for the sport, was what also endeared him to so many people. On Eamonn's London Marathon win he proclaimed, 'If Arsenal can win this afternoon, I'll be walking on the River Thames. In fact, I might drink it.'

It was hard to know Mel without also knowing his love of Arsenal FC. He was a constant presence at their games. And he always seemed to be able to find a television somewhere showing 'the game' when athletics took him too far from Highbury/the Emirates stadium for him to attend in person.

Our sympathies go to Mel's family and many friends at this sad time.

(With thanks to England Athletics)

David Rudisha

INTERVIEWED BY ALASTAIR AITKEN (AUGUST 2011)

(Born 17.12.88 at Kilgoris)

IAAF WORLD ATHLETE OF THE YEAR 2010

I talked to David Lekuta Rudisha the day before he won the 800m in the Grand Prix at Crystal Palace in a British All Comers record of 1:42.91. That took Steve Cram's All Comers record off the books, which had stood for 25 years.

When did David Rudisha have that initial feeling of wanting to run

'When I was still a kid in school at St Francis Secondary school in Iten.'

'My Father was a good runner.'

(Daniel Rudisha who ran for Kenya in the 4x400 in the Mexico Olympic of 1968. His team Kenya came second in 2:59.6, behind the Americans and ran the anchor leg in 44.7).

Was it the fact that his Father was a good runner that inspired him then

'I just liked running. I started out without any big dreams that I would become a world beater.'

'It was when I became serious I found athletics was almost a business. If I ran well I could achieve well. That was when I started to train in 2003-2004.'

'It was in 2005 I found and met my coach Colm O'Connell an Irish Priest'

When was his first breakthrough.

'My first achievement was winning the World Junior 800 title in Beijing, China in 2006. That was my big step to start my career.' (1:47.40 in August of that year. The next year he ran a PB of 1:44.15)

Talking about his coach: 'He has been a very good coach since I met him and he has been coaching me very nicely. Since then we have been working together very well and I have been improving my times.'

Did David read about people like Paul Ereng and Kip Keino

'In 2003-2004 I started getting the passion for the sport, I read the magazines and saw the top athletes of the time and that inspired me. I read about Billy Konchellah who came from the same place I came from, the Masai. It was really good for me to know that I could make it, knowing I came from the Masai too'

More about his coach

'My coach is very specific. He knows how to coach the youth and coaches mostly youths. He knows how to coach them gradually, the type of training graduating to the senior level. The training as a senior is almost similar. That is depending on the duration and time and how they are improving. You can just improve with quality and quantity as time goes on.'

David Rudisha set a couple of World records in 2010 over the 800. 1:41.09 on the 22nd of August in Berlin and 1:41.01 on the 29th of August in Rieti so, which one stood out and, was it a surprise, so early in his career, to run so fast at the age of 21.

Which World record stood out for him?

'Really people expected me to do that with my structure and my running stride. People were telling me 'One time you will break the World record.' That was even when I was in school!'

'I was really determined to break the World record. Breaking the World record was something that was seen by many and, they were expecting me to do it. I knew at one time I would do it.'

'The special one was the first one in Berlin. I was just trying but I was not

expecting to break the World record, and after that I was expecting to run even faster in Rieti. The Berlin World record was a little bit tougher to break.'

Did David Rudisha feel he would run for a long time

'I enjoy running and running is my passion. That is my career. I want to run for many years. To be consistent in my running is my focus, to be running well for a couple of years'

'It is always important to focus on your event. That is what I am doing at 800 and focusing on that only. I don't want to run 1500. I do 400's for specific training (He ran 45.50 last year) 'I am focusing on the 800.'

There is a lot of good competition in the World like Abubaker Kaki and Boaz Lalang which must help push him forward

'Good competition there. Also very determined athletes in the 800 and it makes for good stiff competition that we give each other.'

Did he feel that in a big competition he might do a 400 in a relay

'As a junior I did that. Maybe at a Championship if I am feeling strong I can help the team.'



David Rudisha
winning the
800m at Daegu

BMC Awards



Photo © David Lowes

Above: David Reader presents Richard Taylor with his BMC/Horwill Research Award for 2010



Photo © David Lowes

Above: BMC President Norman Poole presents Phil Banning with his Outstanding Contribution to Coaching Life Time Award



Photo © David Lowes

Above: John Graves Chairman of England Athletics presents Bud Baldero with his BMC Coach of the Year Award



Photo © David Lowes

BMC Founder presents Rod Lock for his Outstanding Services to the BMC

BMC COACH OF THE YEAR

- Bud Baldero
- also nominated C Winrow & J Nuttall*

BMC OUTSTANDING SERVICES TO COACHING LIFETIME AWARD

- Phil Banning

FRANK HORWILL AWARD FOR OUTSTANDING SERVICES TO THE BMC

- Rod Lock

BMC/HORWILL RESEARCH SCHOLARSHIP AWARD

- Aaron Thomas
- Note: 2010 award to RICHARD TAYLOR was presented at the Dinner.*

BMC ATHLETE OF THE YEAR

- Mo Farah
- also nominated H England & A Osagie*

BMC YOUNG ATHLETE OF THE YEAR

- Adam Cotton
- also nominated J Judd, C Grice & Z Seddon*

Epic Moment for the 800m

The early years of the 1950's saw the Men's 800m dominated by the Americans. In 1950 they had five of the top six ranked men for the year, led by the 1948 Olympic Champion, "swivel-hips" Mal Whitfield with 1:48.5. The following year they had two of the top four rankings with Whitfield again leading with 1:48.9. The Olympic year of 1952 saw Whitfield retaining his title and having a World leading mark of 1:48.0. He again led the world in 1953, this year his best mark was 1:47.9, and to rub it in there were two other Americans close behind, one second on the list and one fourth. Whitfield's mark was the best recorded for some long time. The, then, fabulous 1:46.6 clocked by Rudolf Harbig had been set in 1939 and seemed out of sight.

However in 1954 the "old Empire" struck back! Prior to the European Championships in Berne that year, the European season had thrown up the numbers two, four and five on the world all-time list! One of whom, Gunnar Neilsen of Denmark, would not

contest the 800m having, so it was said, agreed with Roger Moens of Belgium, not to spoil the latter's chances. He would run second to Roger Bannister in the 1500m.

Unusually, for the time, the race was started, as happens now, near the bend. Derek Johnson and Tage Ekfeldt of Sweden both used starting blocks...not a current practice but who knows? There was a scramble, not surprisingly, at the start with Audun Boysen getting to the front. He had said he would aim at 51.5 but his actual leading time was 52.4. Not especially fast to-day but almost unheard of then. Behind him Lucien De Muynck of Belgium 52.5, Roger Moens 52.7, Lajos Szentgali of Hungary 52.8 and Derek Johnson 53.1. (I had a seat not 10m from the finish line and was salivating when I checked my stop watch.) These positions remained very much as they were, could I really expect anything different at this speed? That is until the home straight was reached. Moens was passed by the Budapest fireman and

Belgium's number two De Muynck (who admitted to only training twice per week!). The Norwegian front-man faded and Johnson closed with a 54.3 lap...the same speed as the winner. The world had seen little like it before and it was a turning point. Some of the leading five went on to better things but not all, for them it was run of their lives.

● Szentgali	1:47.1
● DeMuynck	1:47.3
● Boysen	1:47.3
● Johnson	1:47.4
● Moens	1:47.8

The next man, almost in the B final, ran 1:51.4 and soon to be Olympic 1500 champ, Ronnie Delaney was eighth in outside two minutes. The first five headed the world list for the year, relegating Whitfield to seventh! Personal Bests abounded. Truly a memorable race and one that caused one noted and distinguished commentator to suggest "the 800m is now a sprint race"



Boysen-DeMuynck-Moens-Szentgali-Johnson. (Note that none of the five men had a foot on the ground. They were surely "flying".)

Seb Coe at the European Endurance Conference

Seb Coe gave a short Key Note address at the European Endurance Conference on how one race changed his and his coach; father Peter's views on coaching. After the Prague European 800 metres Championship in 1978 when Seb had had run his first lap in 49.3 seconds, but could not sustain it, they realized they needed more input in order to run the second lap at a similar pace. They therefore enlisted the help of Sports Scientists and conditioners with the aim to make him fitter, stronger and better prepared for the second lap at such a sustained pace. The result was a world record for the 800 metres the following year.

Seb was then interviewed by the editor – a longer interview appeared in the last Autumn BMC News – where he outlined the importance of cross-country as a great base and foundation for youngsters. That he felt the elimination of a round and an extra days rest had no longer made the major championships 800 metre races a true endurance event. He explained how he came back to win the Moscow 1500 metre title and how it took an even greater effort to retain it in Los Angeles after a truncated year of training due to toxoplasmosis, (a severe infection of the lymph glands) which debilitated him for most of the previous summer and winter.

He believed that his previous foundation of cross-country running, running over the hills around Sheffield and the Peak District, and his hours of training and conditioning had helped him get back to Championship fitness much quicker than one would have expected.

As a young fifteen year old he was training every day and sometimes racing two cross-country's in a weekend. By the age of eighteen he was doing two sessions a day some of which were conditioning

sessions. He only ever used his spikes on the track as he approached the competitive season. Preferring to use trainers then racing flats. Two of his two key sessions were 8 x 300 metres with a rolling 100 metres in between averaging 36 seconds, and 5 x 800 metres with two minutes recovery where he averaged sub 1 minute 47 seconds. Although committed totally to the 2012 Olympics Seb's love for athletics and his passion for endurance running still burns bright.



Training for Endurance Performance

JACK DANIELS AT STILL UNIVERSITY MESA, ARIZONA

Jack Daniels is the world renowned coach and author of "Daniels Running Formulae: Proven Programmes 800m-Marathon". The following is an overview of his Training Philosophy delivered at the recent European Endurance Conference incorporating the BMC Conference.

Some Considerations for Coaches:

1. No-one has all the answers
2. Athletes are people
3. Achieve basic fitness
4. Coach's job is to provide an environment
5. Avoid injury
6. Focus on the task at hand

The Ingredients of Success

1. Inherent Ability
2. Motivation
3. Opportunity
4. Direction



#1 Inherent Ability

Anatomical - Correct anatomical requirements for endurance running
Biomechanical - Good Technical Model/Running Efficiency
Physiological - Correct energy requirements

#2 Motivation

Intrinsic – Should come from the athlete
Not the parents
Nor their peers
Not coach

The Types of Individuals a Coach will Encounter;

- 1 Great ability + High motivation = Champion
- 2 Great ability + Low motivation = Coach frustrator
- 3 Little ability + High motivation = Self frustrator
- 4 Little ability + Low motivation = No show

#3 Opportunity

Facilities – and Environment
Competition – programme of correct races
Equipment
Travel

#4 Direction from the Coach

Program – Individualized training plans
Teacher – Correct Habits/Life Style
Coach – Technical and Running Input. Planner
The potential for negative – Be positive with the athlete (s)

How Do We Train ?

- The surviving-egg theory? Everyone one does the same – those who survive succeed
- What my coach did to me? Replicate the programmes the Coach did as an Athlete
- What do the champions do? Follow a Champions training programme
- We need some guiding principles – Correct Training programme

A Week in High School

Sun 10 miles in 65 minutes
Mon 2mile 9:55 + 2X1 5:15 + 3X800 2:28
+ 6X400 65 + weights + 4miles
Tue 6X400 64 + 10X140 18 + 5X200 31 +
Wed 50X400 @ 69 on 3-min sendoff
Thu 18X800 @ 2:45
Fri 1600 + 1200 + 800 + 600 + 400 + 3mi
Sat Race day

Principles of Training

1. The body reacts to stress – therefore it should be stressed at certain times
2. Specificity – Should be specific to the Athlete
3. Benefit depends on type of stress – and how much it adapts
4. Ease of maintenance - Maintaining the programme without undue stress
5. Rate of achievement – How the athlete is progressing
6. Personal limits – How far can they go?
7. Diminishing return & accelerating setbacks

Purposes of Training

1. Increase available energy
2. Improve speed
3. Improve economy
4. Improve endurance

Tracking Training Intensity Formulae

E/L = 0.20 X minutes at Easy/Light pace
(65-79% Heart Rate)(60 min = 12 points)
M = 0.40 X minutes at Medium pace
(80-87% HR)(60 min = 24 points)
T = 0.67 X minutes at Training pace
(88-94% HR)(30 min = 20 points)
I = 1.00 X minutes at Intense pace
(95-100% HR)(20 min = 20 points)
R = 1.50 X minutes at Race pace
(>max HR)(12 min = 18 points)

Tracking Training Intensity

Example Week	Pts
120min E 120 X .2	= 24
60min E + 6X3min I = 12 + 18 X 1	= 30
90min E 90 X .2	= 18
90min E 90 X .2	= 18
30min E + 40min T = 6 + 40X.67	= 33
90min E 90 X .2	= 18
30min E + 30min I = 6 + 30X1	= 36
Week Total	= 177pts

Example of a Long training Run:-

2 E (6:30) + 10 M (5:37) + 1 T (5:21) + 5 M (5:37) + 1 T (5:19) + 2 E (6:20) = 2:00:35 for 21 miles (97 points)

Setting up a Season of Training

I	F I	Base and injury resistance
II	I Q	Prepare for training ahead
III	T Q	Systems of importance
IV	F Q	Peak performance

Season Schedule

I	II	III	IV
Base Training	Faster & Threshold Work	Interval Work	Sea Level Race Conditions
<hr/>			
<div>< Altitude ></div>			
13 weeks	18 weeks	14weeks	17 weeks
Use 400m pace for 800m and 1500m training eg. 52second 400m pace for 1m 54s + 800m athlete or 4m 03s + 1500m runner. Or			

Altitude Training Views

- Altitude natives win at sea level
- Elite sea-level athletes move to altitude (and continue to win at sea level)
- Would-be elites can't afford altitude so spend their money on altitude tents
- Without altitude you can't be elite?

Live high Train low

- So speed is not lost
- Easy intensity is about 80-85% of work
- Fast, repetition work is not affected
- How about threshold training - Do we work at same intensity?
- How about Interval training – Do we need more recovery?
- How about altitude natives ? – Do they have an advantage
- Do we send the right message ? – So we can compete with the Natives.

Therapy, Technique and Training

WYNN GMITROSKI; RPT, CH. P.C. LEAD COACH

& PHYSIOTHERAPIST NATIONAL ATHLETICS CENTER VICTORIA, B.C. CANADA.



The following is an overview of Wynn's recent presentation at the European Endurance Conference incorporating the BMC Conference.

Primary Elements for the Coach and Athlete

1. Motivated Talent
2. Optimal Patterns of Functional Movement
3. Accurate quality consistent training
4. Recovery methods supporting adaptation
5. Competition Readiness

Long Term Development

Sequence for success:

6. Optimal functional movement – Technical Model/Running Efficiency
7. Stabilized capacities
8. Specificity

Therapeutic Methods to assist above:-

Manuel Therapies

- Joint Mobilization & Manipulation
- Soft Tissue Mobilization
- MFR
- ART

Modalities

- US, laser, IF, Shockwave etc.

Injury Prevention supports consistent performance

The coach Should:-

- Observe in training
- Individualize training & treatment
- Communication & education
- Vary progressive loading
- Plan days & time off
- Integrate recovery
- Regular assessment & proactive treatment
- Correct Inefficient Habits

Technique Training Should Include:-

- Functional Movement
- Postural Alignment
- Neuromuscular Flow

Good Posture

– The Starting Point

- Good Posture helps reduce stress
- The Base of Technique
- The better the technique more efficient the movement

What is Efficient Movement?

- Work done with minimal energy expenditure
- Better performance

Functional Movement

- The ability to explore a full range of movement, demonstrating body control and awareness throughout numerous positions.
- Develop & optimize at the entry level, refine at higher levels of performance
- Interaction of Mobility & Stability
- Influenced by Symmetry, Tissue Tension & Focus

Efficient Movement Therefore:-

- Enhances Skill
- Improves Stability
- Increases Load Tolerance
- Reduces Energy Expenditure

Neuro-muscular Flow

- Is the Fluidity of Movement and
- Effective function without restrictions to performance

Where to Start?

Meticulous Observation of Detail

Static & Dynamic Postures in these Areas:

- Head Position
- Shoulders
- Lateral Hip Stability
- Pelvis & lumbar spine
- Feet

What to look for?

- Weak Links
- Path of least resistance
- Movement through the Hips & Shoulders
- Breathing Patterns

Leads to the Following Performance Benefits

- Enhanced Motor Control
- Relaxation
- Optimal Technique
- Proactive Injury Prevention
- Reduced Muscular Work
- Decreased Energy Expenditure
- Lower Heart Rate for given workload
- Decreased Work with Respiration
- Reduced hormonal stress responses
- Stability & Symmetry of the body
- Increased Capacity to Tolerate Loads

Athlete Responsibility

Accountability for their performance:

- Self awareness
- Trust
- Honesty
- Communication
- Will to work with the ability to tune in to themselves

Denial often indicates a lack of confidence

Responsibility of the Coach

- Ask the right questions
- Observe
- Implement Change
- Do no harm
- Cooperative independence:
- Don't do too much for the Athlete as it may make them soft

Management Priorities

- Don't let all the hard work go down the drain due to medical conditions
- Prevention is the key
- Early diagnosis to avoid problems
- Early intervention to stop further problems
- Know the risks

Letting Go of Control

- **Belief:** Many athletes and coaches attempt to control their environment hoping it will enhance skill acquisition to produce results.
- **Paradigm Shift:** Most top performances are a consequence of giving up control, with the athlete **FEELING** what is happening, allowing what has been practiced to occur without force.

It therefore is In the control of the body - Out of the head.

Medical & Performance Issues of the Endurance Athlete

BY DR. JOHN ROGERS (UKA DOCTOR) AND TOBY SMITH (UKA PHYSIOTHERAPIST)

The following presentation was given to coaches of elite athletes (UKA/England) at Loughborough in May.

Aim

- To Maintain Health and Optimize Performance
- Injury Prevention and Management
- Illness Prevention and Management

Overview - Injury Prevention and Management :-

- Achilles Tendonopathy
- Bone Stress Injuries

Achilles Tendonopathy

- Structure and Function
- Tendon Adaptation
- Tendon pathology
- Prevention

Functional Movement Screening -----> Strength and Conditioning -----> Medical Support -----> Nutrition-----> Biomechanical Analysis and Modification

Tendons store elastic energy and adapt slowly to exercise. Tendon load requires the tendon to store and release energy which is eccentric, stretch shortening and fast.

Tendons that are not coping with the training load show the following symptoms:-

- Morning stiffness
- Pain during exercise
- Pain that increases 24-28 hours after exercise

Prevention

- Modify the Training Load
- Strengthen Muscle/Tendon to tolerate the load
- Kinetic Chain
- Implement prevention strategies

Bone Stress Injuries

- Bone adaptation
- Pathology
- Risk factors
- Prevention

Main stress fracture in runners occur Tibia 55%; Metatarsals 23% and the Fibula 14%. . Note: Wolfs Law – “Bone is a living structure and adapts itself

to it's surroundings and the demands placed on it”

Repeated loadings at sub-fracture stress levels results in microdamage accumulation. Many factors affect bone stress injuries:- Age; Training; Endocrine: Diet; Bone Density; Bone Quality; Bone Geometry; Muscle Strength and Biomechanics.

Prevention

- Early Reporting of Pain
- A Dexa scan is a very good preventive particularly for Female runners
- Conditioning – Muscle Capacity; Bone Health. Muscle protects Bone and has the ability to absorb 100 times more energy than bone
- Nutrition – Energy Balance must be addressed.
- Smart Training – Dynamic Loading of short duration
- Athlete Education
- If a problem can maintain fitness through:-
 - Aqua Jogging
 - Cycling
 - Swimming
 - Rowing
 - StairMaster
 - Cross Trainer (Elliptical)
 - Nordic Ski
 - Alter Gravity Machine
- Other modifications that can be utilized:-
 - Training
 - Footwear
 - Orthotics
 - Biomechanical Abnormalities
 - Menstrual Status
 - Dietary Intake

Therefore if there are concerns screen for risk factors. Implement prevention strategies and modify certain aspects of training and life style. A multidisciplinary approach is the key.

Overview - Illness Prevention and Management:-

- Cardiac Screening
- Breathing problems and Allergies
- Fatigue/Underperformance
- Female Athlete Triad

Cardiac Screening

- To identify any cardiovascular

abnormalities

- Reduce potential for adverse events and possible loss of life
- Problems if found need to be acted upon

Also need to answer A Personal and Family History Questionnaire (Wilson et al BJSM 2008)

Breathing problems and Allergies

Exercise Induced Asthma

- Shortness of Breath
- Cough
- Wheeze
- Chest Tightness
- Hayfever or eczema
- Family History

Solutions:- Powerbreathe; Respi vest; Breathing Techniques.

If the symptoms are below the neck – Fever; Fast Heart Rate; Muscle Pain; Lethargy – the athlete should refrain from training/competing.

Allergies

- Limits Performance
- Triggered by food, insects, animals, house dust mites, grass/tree pollen and medication
- Tests – skin prick and blood tests

Fatigue/Underperformance

- If felt it for 2 weeks despite adequate rest/recovery it is a problem
- Athlete should be the 4H's – Happy, Hungry, Horny, Healthy Heart = Healthy

Common Causes of Fatigue

- High Training Intensity and/or volume with inadequate recovery
- Life Stresses
- Nutritional Deficiency
- Post Viral Illness eg: glandular fever
- Asthma/Hayfever

Check **Iron**:- Ferritin stores. Men (30-300 ng/ml), Women (10-160 ng/ml) Treatment required if under 30 ng/ml. Females and Adolescents more prone a deficiency can lead to anemia. Note athletes requirement higher than the norm. Deficiency caused by heavy training, menstruation, growth,

infection/illness, inadequate diet/malabsorption.

Good sources of iron – Red meat; Liver, Cereals, Muesli, Wholemeal Bread and green Vegetables.

Female Triad

- Disordered Eating
- Amenorrhea
- Osteoporosis

Low Energy Availability:-

Dietary Intake (EI) allows exercise energy expenditure (EEE) normalized to the athlete's fat free mass (FFM).

Low or inadequate energy availability impairs both the reproductive and skeletal health of the athlete.

This leads to a reduction in performance due to an inadequate energy intake to fuel and maintain exercise.

Menstrual Function

- Primary Amenorrhea – No periods by 15 years of age
- Secondary Amenorrhea – Absence of Periods for more than 90 Days
- Oligomenorrhea – Cycles longer than 35 days
- Causes – FHA (Endurance Athletes), Pregnancy, polycystic ovaries, hypothyroid, hyperprolactinaemia
- There is a greater risk of stress factors with athletes with amenorrhea than athletes with normal periods



2011 BMC / Horwill Research Scholarship Winner

We are pleased to announce that the 2011 BMC/Horwill Research Scholarship has been awarded to Aaron Thomas. The scholarship is now in its third year and the number of applicants for this year's award was the highest ever.

Aaron's research topic is entitled, "An evaluation of the mechanical and physiological factors associated with fatigue in middle-distance running". He will be working on this over the next twelve months and we will bring you the findings through our magazine, website and any conferences that we are involved in.

As well as working at York St. John University in the Sport Science department, Aaron is also an active coach of endurance male and female athletes.

British Milers' Club Indoor Grand Prix Races

Sunday 8th January 2012

The EIS, Coleridge Road, Sheffield, S9 5DA

Events // 800m / 1500m / 3000m // M & W



www.britishmilersclub.com
More Info. stevegreen2011@live.co.uk // 07834 773 706

 **RUN**  

Courtesy of
England Athletics

Photograph: David Greenwood

England Athletics Hall of Fame Evening

BY ATHLETICS WEEKLY

BMC President Honoured

Along with Derek Ibbotson and Tom Hampson BMC President Norman Poole was honoured for his services to coaching at the recent England Athletics Hall of Fame Evening

Norman Poole has coached many athletes over a long career to Commonwealth and Olympic standards, such as Diane Modahl, Ann Griffiths and Kevin McKay. More recently, his success has taken the form of Tom Lancashire and Mike Rimmer. Norman has extensive events knowledge across 800m to 5000m and he commits to passing on his knowledge and skills, invests in mentoring others and has been a regular contributor to BMC coaching events and activities.

Derek Ibbotson

The “four-minute smiler” has not lost his swagger and one of the most popular athletes alive brought laugh to the room as he remembered a career that included Olympic 5000m bronze in 1956 and a world record for the mile.

Brendan Foster could not resist chipping in either on stage when he told a great story of how his uncle sneaked him into the changing rooms after a meeting in the North East of England to meet Ibbotson and, aged nine, he was inspired by the athlete's crisp white England tracksuit and vowed to get one himself one day.



Above: Middle distance coach Norman Poole was recognised for his services to coaching

Below: Brendan Foster & Katherine Merry present Derek Ibbotson with his award



Hannah England has paid tribute to the work of the British Milers' Club

BY KEVIN FAHEY

The 24-year-old newly-crowned World Championships 1500m silver medalist has been a big supporter of the BMC races since joining in 2001.

Indeed, she had intended to run the Grand Prix event at Watford on June 11th until injury forced her to withdraw and while England's success in Daegu will now get her access to major races around the globe she insists BMC races will continue to feature in her future plans.

"The BMC is great at providing really good races and the chance to run personal bests," said England

"I think we (middle distance runners) are the envy of the sprinters and throwers who don't have that same structure.

"For a long time all my personal bests were set in BMC meetings and they provide such good competition."

The Oxford City athlete, who is coached by Bud Baldaro, made her debut in a BMC event on May 1 2000 when as a 13-year-old she finished runner-up in the 800m C race at the popular PB Classic meeting staged at Millfield School, in Somerset, clocking a time of 2mins 22.89secs.

In the following seven seasons she

was a regular at BMC meetings around the country - including six successive appearances at the Millfield meeting - a run that was only ended when she went to America on a scholarship to Florida State University in 2007/8.

"I didn't just do the races but also went on the training camps to places like Ogmore (in Wales) to run on the sand dunes," added England.

"I have done them all and I would recommend them to all athletes."

After her stunning success in Daegu, when her silver smile was one of the images of the meeting in South Korea, England ended her season with races in Brussels, Newcastle and the Fifth Avenue Mile in New York.

She'll then take a well-deserved break before beginning her build-up to the 2012 Olympic Games in London and said there is every chance that a BMC race will feature in her preparations.

"When I look at the start list for some of the races at Watford, for example, I know there is no need to go abroad to find a race," said England.

"I missed Watford this season due to injury but perhaps next year I'll race there if it fits into my plans."



Knowles Ambition for Exeter

JOHN Knowles is understandably proud of the success of the BMC regional races at the Exeter Arena in Devon.

The growth of the races, both in terms of quantity and quality, has given middle distance running in the west country a huge lift providing good quality competition for runners in Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset and Wiltshire.

This season the four meetings have also started to attract entries from south Wales while the final race in August also boasted Cornwall Olympian Jemma Simpson in the field.

Simpson and Wales international Chris Moss were among 125 runners who contested the twelve races over 800m and 1500m, a far cry from the last meeting in the pre-Knowles era when 42 runners turned up at the Arena on July 30th 2002.

"The following two years there weren't any BMC races in Exeter but by 2005 I offered to start them again to help

the region's young athletes achieve qualifying times for the English Schools' Championships," said Knowles.

"I spoke to Pat (Fitzgerald) and the people at Exeter Harries and we decided it was time to give it another go."

The BMC Exeter races were re-launched on March 29th 2005 with 13 runners lining up for a mixed 1500m race. By the end of that season word had spread and the August meeting attracted 59 runners in six 800m races.

"Since then it has grown every season and I have been delighted with the response," added Knowles, who is also helped by North Devon AC coach Mark Brace.

"Geographically Exeter fits really well into the BMC programme, offering races for athletes around the West County and now south Wales.

"Initially I focused on talking to coaches and encouraging them to bring their athletes to the meetings and gradually word has

BY ATHLETICS WEEKLY

spread and we now regularly get over 100 entries with a peak of 150.

"Exeter Harriers have allocated us a one-hour slot in their open meetings and the recent addition of electronic timing and photo finish equipment is really appreciated by the athletes."

Knowles could easily rest on his laurels after firmly re-establishing the Exeter races on the calendar but the drive that fuelled him as an athlete and more recently coach means he is not happy yet.

"We are a bit short of Gold Standard meetings at the moment but the goal is to create Exeter as a meeting alongside the likes of Stretford and Watford and establish a golden triangle," explained Knowles.

"With those three meetings we would then offer top class races for runners in the north, south and west. I think that would be a fantastic service for our up-and-coming athletes and I would love to see Exeter come up to that level one day."



AGM Agenda

Secretary: David Reader,
Tel 07929 860389, Email: davidreader@britishmilersclub.com

Notice is hereby given that the **Annual General Meeting** of the members of the above-named Club will be held at HOLIDAY INN HOTEL, 61 HOMER ROAD, SOLIHULL, B91 3QD

SUNDAY, 20 NOVEMBER 2011 at 2pm

AGENDA

1. Apologies for absence
2. Consideration of Minutes of the Annual General Meeting held 5 Dec 2010
3. Matters arising from them
4. Chairmans Report
5. Financial Report
6. Competition Report
7. Academy & Coaching Reports
8. Election of Officers & Life Member
9. Any other business

Dated 12 October 2011
David Reader
By order of the Committee

Anyone wishing to put their name forward for election or wishing to assist the BMC in any way should make themselves known.

Would appreciate advise of attendance to ensure accommodation of numbers

ANNUAL SUBSCRIPTIONS for 2012 are due on the 1 January. Please pay promptly to ensure you receive your membership card for you to benefit from special low members rates for races and courses. Still £20. Send to: British Milers Club, Pat Fitzgerald, 47 Station Road, Cowley, Uxbridge, Middlesex, UB8 3AB.



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