British Milers' Club News

Issue No. 47, Autumn 1990.

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BMC NEWS EDITORIAL
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Cover pic: (Cocksedge photo) John Gladwin leads Steve Crabb, Peter Elliott and Tony Morrell in GP Mile at Battersea Park last May. Elliott won in 3:51.80.

Published by the
British Milers' Club

BRITISH MILERS' CLUB ANNUAL
Reebok AGM weekend
Saturday/Sunday October 27/28
At Finham Park Comp. School
Green Lane, Coventry.

Apply to: Jerry Murland, 113 Stoney Road, Cheylesmore Coventry CV3 6HY. £12 to BMC members; £15 to non-members. AGM at 16.30hrs on October 27th.

Paid your subs yet? They were due on Jan 1st. Send £8.00 to Pat Fitzge ald at the Acacia, 47 Station Road, Cowley, Uxbridge, Middlesex.

RON HOLMAN
1937 - 1990.

The much respected former National distance coach Ron Holman died after a lengthy battle against stomach cancer on August 31st, 1990. He had been a member of Cambridge Harriers for over thirty years and competed for them on track, road and cross country before taking up coaching at the age of 32.

Holman was a regular supporter of the Southern coaching courses at Merthyr Mawr, South Wales, where he was able to contribute valuable medical support thanks to his profession as a bacteriologist.

Ron joined the BMC as an Hon. AAA Coach in 1969 and became a Senior BAAB coach a year later. In 1971 he progressed to a Southern staff coach appointment, and was made National distance coach in 1978 with special responsibility for 10,000m and marathon events.

During this time Holman was able to take blood samples from all levels of athletes who came to him for guidance and consultation at his base in Lewisham hospital, and he published several excellent papers on the pecularities of haemoglobin readings, a subject in which he became a World leading expert.

Holman served on the BMC National Committee from 1974, and was elected Vice President for his services, but after an unfortunate disagreement with the chairman and committee, he resigned from the club in 1981.

He lectured at many major international conferences and in 1983 was co-author with Dr. John Humphreys of FOCUS ON MIDDLE DISTANCE RUNNING, a learned tome on the physiology of the sport, which received mixed reviews.

But Ron, an ardent jazz fan, was most happy at the trackside coaching his own athletes. Over the years his group included internationals Keith and Glynis Penny, Glen Grant, Paul Williams, David Classborow, Liz Barnes and Barry Smith. A stickler for protocol, he was most respected for never using his priveledged position to 'poach' athletes.

After attending the 1980 and 1984 Olympics, 1983 World and 1982 European Championships as a UK team coach, Holman resigned his UK Coaching appointment due to work pressures in 1985. Then after three major operations, ill health forced him to take early retirement from work in 1989.

Dr. Ron Holman made an invaluable contribution to distance running coaching knouledge during a lifetime's devotion to the sport, and will be sadly missed. He leaves a wife and two teenage children to whom we extend our sincere sympathies.

Letters to the Editor

AT gets Results, says Randall

We at ATHLETICS TODAY would like to thank Achilles for his kind, is slightly inaccurate, remarks in the Spring 1990 issue of BMC NEWS.

We don't, however, cover essentially the same news and results. Last year we carried results from 11 percent more meetings and races than ATHLETICS WEEKLY. Hardly essentially the same. And our overseas coverage is immeasurably superior.

Perhaps the AW results service will improve in future. We understand BMC NEWS Editor David Cocksedge is helping out.

Bet you don't print that last paragraph!

RANDALL NORTHAM, Co Editor.. Athletics Today

No smoke without fire

Liked the Spring issue of BMC NEWS, especially the advice about cutting down on fire fighting in the two days before a race.

No doubt Derek Ibbotson will confess to Tony Ward that he put out a fairly large bonfire before running a sub-four mile at the White City once; back in the days when men were men....

Eh oop! They don't make 'em like that anymore.....

GEOFF HARROLD, Former editor, Marathon & Distance Runner.

BMC QUIZ
Compiled by FJH/DC

Compiled by Frank Horwill and David Cocksedge

The first ten questions are mainly for the coaches among us, but of course all are welcome to test their knowledge. The next ten have been set by David Cocksedge. If you can score 70 per cent and above, you are entitled to call yourself an expert.

1) Can you define pure speed in athletic terms?
2) You are asked to help a male athlete with best times of 48.0 (400), 1:50.0 (800) and 3:49.0 (1500). Which is his weakest event?
3) If an athlete is told to lie in the PRONE position or the SURPINE position during exercise, what is the difference?
4) Matthews and Fox have set out these energy sources for a middle distance event : ATP-PC - 30 per cent; Aerobic capacity (oxygen system) - 5 per cent; Anaerobic capacity (speed + lactic acid system) - 65 per cent. Can you name the event and what type of track sessions are best suited in conditioning an athlete for it?
5) Can you make a criticism of the much quoted pulse recovery rate of 120 beats per minute for an athlete doing a specific session for 5000 metres?
6) Women athletes often suffer from debilitating cramp during menstruation. Do you know the cause of these cramps and what is the best remedy?
7) What is generally recommended for pre-menstural depression?
8) Several weight-training authorities quote the numerals FIVE and TEN regarding repetitions. What is the significance of these figures?
9) What is being risked by running 20 miles, followed by 15 miles and 10 miles on successive days, as defined by Costill?
10) Can an athlete have an access of IRON in his/her diet?
11) In which mens' European Championship track events have British athletes never won gold medals?
12) Diane Edwards made the European 800m final in 1990. When was the previous occasion that British women achieved this?
13) What is the average 400m lap pace required to equal the World 3000m record?
14) The city of Zurich is at sea level. A true or false statement?
15) Who won the 1972 Womens' Olympic 800m title?
16) Can you name the European 1500m Champions from 1950 to 1990?
17) Who was the first woman to run inside 4 minutes for 1500m and when was this feat achieved?
18) Who has the fastest 400m time of Britain's sub 1:46.0 800m men?
19) Who has the fastest 400m time of Britain's sub 2:00.0 800m women?
20) Can you name the athletes who have won European titles at 1500m AND 5000m?

BMC QUIZ

Answers, next page (upside down).

1) Rate of stride times length of stride. For example: 5 strides a second with a stride length of 7 feet = 35 feet per second. Five strides a second with a stride length of 7ft 6 in = 37ft 6in.
2) An athlete with a best of 46.0 for 400 should be able to run 800m in 1:46. An 800 best of 1:50.0 is worth at least 3:45 for 1500m; therefore his weakest event is the 1500.
3) PRONE is face down. SURPINE is face up.
4) The event is 800 metres. ATC-PC at 30 per cent should be 3 training days out of 10 at 60 - 100m sprinting; eg: 5x10x60m with walk back recovery after reps and 400m jog between sets. Aerobic Capacity (oxygen system) at 5 per cent should be 5min of striding x 3 covering a mile at a time with 2.5 mins jog recovery. Anaerobic capacity (speed + lactic acid) at 65 per cent would occupy 6 days in a 10 day cycle and could be 5x600m at race pace with twice the time taken for the rep as rest; e.g. 90sec rep/3 min recovery; or 4x800 in 2:00 with 4 min recovery.
5) Racing 5000m in 13 minutes means covering the first mile (1609m) in 4:12 or faster. The pulse at this point will be 150 bpm. The next two miles will see the pulse rate go to 160 bpm. Therefore if an athlete was running 4x1 mile in 4:12 based on 120 bpm recovery he would not be preparing himself for work at a higher pulse rate. Perhaps 130 bpm recovery would be more suitable.
6) Women suffer acute calcium shortage during menstruation which leads to cramp in some cases. Calcium lozenges as recommended by a pharmacist should be taken.
7) Women suffering from pre-menstrual depression are recommended to take up to 50 mg of Vitamin B6 daily. More should NOT be taken without medical advice. Evening Primrose oil has also been well recommended.
8) For POWER the weight should only be handled FIVE times; e.g. 3x5 squats with bodyweight. For ENDURANCE, half maximum of the five that can be handled; e.g. 3x10 at half bodyweight.
9) Glycogen depletion. Even with a heavy ingestion of carbohydrates the glycogen content of the muscles cannot be replenished fully, and all running for two days after the 20 mile run will be sub-standard. Costill suggests that the day after a weekly long run should be treated as an active rest, or complete rest day.
10) Yes, especially if food is cooked in iron containers and the diet lacks protein. Iron tablets should be taken under medical advice or for no more than 14 days in succession without medical advice. The condition known as 'siderosis' may occur which causes irreversible damage to the liver.
11) 10,000 metres and 3000m steeplechase.
12) In 1971 at Helsinki when Pat Cropper-Lowe took silver and Rosemary Stirling-Wright was bronze medallist.
13) 59.93 per lap for 7.5 laps. The world record is 7:29.45 set by Said Aouita in 1989.
14) False. Zurich is actually 410 metres above sea level, which experts agree is significantly helpful to explosive events.
15) Hildegaard Falck (GFR) in 1:58.6.
16) 1950 - Willem Slijkhuis (Netherlands); 1954 - Roger Bannister (UK); 1958 - Brian Hewson (UK); 1962 - Michel Jazy (France); 1966 - Bodo Tummler (GFR); 1969 - John Whetton (UK); 1971 - Francesco Arese (Italy); 1974 - Klaus Peter Justus (GDR); 1978 - Steve Ovett (UK); 1982 & 1986 - Steve Cram (UK); 1990 - Jens Peter Herold (GDR).
17) Tatyana Kazankina (USSR) with 3:56.0 at Podolsk on 28.6.1976.
18) Brian Whittle (1:45.47) with 45.22.
19) Diane Edwards (1:58.65) with 53.5.
10) Sydney Wooderson (UK) in 1938 (1500)/1946 (5000) and Michel Jazy (France) in 1962 (1500)/1966 (5000).

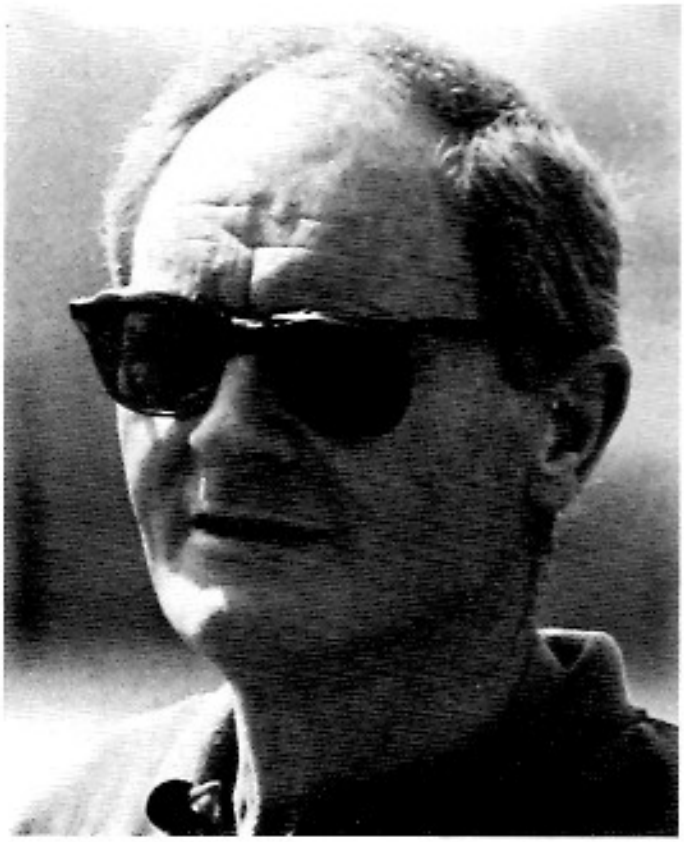

Photo: David Cocksedge.

QUESTIONS FOR THE WINTER

By Frank Horwill

Here are some questions to ask yourself as you embark on another winter's training load:

1) What is my goal this winter?

2) Is this MY goal, my coach's or my parents'?

3) Is this goal environmentally induced?
For example: have you been pressured into racing for the glory of your club in some local cross-country league? Is the club's glory in your interest?

4) What sort of track season have I had?
If your personal bests were reduced at all distances, then there wasn't much wrong with your winter's work leading up to this. If, however, your 800 time is superior to your 1500 or vice versa, what is the reason? For example, a female with a best of 2:08 for 800 should be capable of 4:19 for 1500 and 9:15 for 3000. If your times do not check out in this way, it may be because you just did not race enough below and above your specialist distance. You should race at least four of each in a track season.

If you have raced sufficiently and still not achieved an equitable time to your 800m best, it may be because you have not trained at RACE PACE. To quote from our example, 1500 in 4:19 works out to 69sec per 400. A sample session could be: 2 x 3 x 500m in 87sec with 45sec rest and a lap jog after the third. Now, perhaps you incorporated this type of session but allowed yourself too much recovery time. When training in 'sets' equal to the race distance, the recovery time can be very short. However, if you are doing 'straight through' reps (i.e. 6 x 500 in 87sec) you will need more rest - but not too much! If you jog half the distance of the rep - that's 250m - and allow for a maximum of 3 minutes to jog 400m; then 2 minutes is the maximum recovery period for straight-through reps of 500m.

If your endurance base is poor, you can work specifically to improve it and this will also assist any cross country racing ambitions you may have. For instance, 3000m pace work is invaluable for cross country success. Note that Lynn Jennings (USA) in winning the 1990 World XC title, raced past 3000m in 9 minutes and kept on going - which left her rivals gasping in her wake! Gaining this strength and endurance will not be done by jogging five nights a week, though this is handy for 'active rest' or recovery training.

The real test is to conquer a THIRD of the distance in reps; i.e. 3 x 1000m at your best 3000m racing pace (75sec/400 = 3:07.5/1000 and 9:22.5/3000). Recovery jog should be a quarter distance jog i.e. 250m in 2 minutes max.

Once you can handle 3 x 1000 with ease, another rep should be added and so on until you can manage 6 x 1000. Now you can go back to 3 x 1000 at a faster pace (i.e. 72sec/400 = 3:00/1000 and 9:00.0/3000). Don't feel that you have to stick with kilometre reps all the time. You could try 1500's in 4:41 with 400 jog (3 mins) or 400's in 69 with 100 jog (45sec).

5) Was my basic speed good enough last track season?

There are two types of speed: (a) high phosphate energy work, and (b) the anaerobic break-down of glycogen to lactic acid. The first is sprinting up to 150m and the second is for efforts from 200 to 400m.

To test for the first, sprint 40 yards (36.6 metres) from a standing start and get someone reliable to time you. Men should be able to clock inside 4.9sec, and women 5.4sec. To test yourself for glycogen break down, run 400m flat out with preferably someone to pace you over each 200m. Men should be capable of 52sec or faster, and women 56sec. If you are way behind these readings I recommend you do something about it this winter.

Note that nearly always, weak sprinters lack leg strength - they simply do not devour enough ground per stride. Hopping 25 metres on each leg daily will strengthen them: do this on grass. If you start with 12 hops to cover 25m, keep at it until you can complete the distance in 10 hops. If you do not incorporate any sprinting in your track training, don't expect to have a kick finish when you race.

To feed both energy pathways mentioned, try one day at 10 x 60m with a 10m run up and another day at 4 x 200 flat out with 400m jog recovery. After a while, up this to 10 x 90m and 4 x 250 or other combinations. Sprint technique is not always natural to middle distance runners, so study others and work at it. Get an expert to watch you sideways and forwards at full speed and note his/her comments.

Everyone can improve their speed and in doing so, aid their overall performance. The correlation between fastest times at 400 and 800 has been proven. Ideally, a female capable of 52sec for 400 who has trained specifically for 800m can expect to run 5 seconds a lap slower over the longer distance : i.e. 57 + 57sec = 1:54.0. The same formula for someone capable of 60sec is 65sec; 65 + 65 = 2:10.0. For men, the pace drop is only 4 seconds. Thus someone who can manage 50sec for 400 should be capable of 54 + 54sec laps for a time of 1:48.0. These figures vary slightly but generally make a good rule of thumb guide.

Seb Coe, with a best 400m of 46.87, was able to race laps in 49.7 and 52.0 for a time of 1:41.73 in 1981 (an average of just inside 51 + 51sec, his exact 400m factor based on rounding up his 400 time to 47sec). On the other hand Alberto Juantorena of Cuba, Olympic Champion at 400 and 800 in 1976, had bests of 44.27 and 1:43.50. Adding 4sec to his 400m best gives us 48.3. Twice 48.3 = 1:36.6! In fact, he was 7 seconds slower at his best in the longer event. The problem was that being 84 Kilos and 1.91 metres tall he was never likely to be in the miling mould. This weight

for height is the same as the average sedentary male! Alberto's speed was his strength, and his endurance his weakness. Note that the World record holder, Harry 'Butch' Reynolds (43.29), merits a factor of 47.3..... That works out to 1:34.6 for 800m! In his case, a (7sec drop-off) factor of 50.3 could be possible; that's 1:40.6.....

The other plus is being able to sprint towards the finish of a race. If we take two athletes of exactly the same basic fitness, the one able to utilise his high energy phosphate system efficiently with a short dash to the finish will always beat the other. Two thirds of all Olympic 800 finals have always been won in the last 100 metres by men able to quicken up and kick for home.

Gaining sprinting speed is a long haul, but worth it. If you are born with natural speed, count your blessings and work on your endurance.

6) I would like to peak for some indoor racing this winter. How should I plan my training?

This is what I would recommend: October/November - One track session a week over distance. For 3000m, train at 5000m pace, for 1500 at 3000/5000 pace, for 800 at 1500 pace.

December/January - Two track sessions a week, one as above, the other at race distance. Example: for 800, 2 x 4 x 200 with 30sec jog and 400m jog after first set. For 1500, 6 x 500m with 2 min jog. For 3000, 3 x 1500 with 3 min jog.

February/March - Three track sessions a week, two as above and one at under distance pace. Example: for 800, 4 x 200 full out with 400 jog. For 1500, 4 x 400 with 400 jog. For 3000, 3 x 1000 with 500 jog.

Other days of the week should encompass a one hour steady run, plus runs at 45 and 30 minutes each at a faster pace. In October/November, there should be extensive hill running. When the indoor season is over, athletes should revert back to October/November training for six weeks to rebuild strength for the summer campaign.

Winner Mary Donoghue (49) and Ceri Pritchard (50) share the pace in BMC Womens' 10,000m track race at Coventry, May 5th, 1990. Photo: David Cocksedge (Canon F-1, 300m f/4).

7) I aim to race well over the country this winter. What is my best plan?
My recommended weekly cycle : (a) Run double the distance of the National; three times the distance for women. Note: slow to easy pace for this.
(b) Run the distance of the race as an acceleration run i.e. 3 miles jog, 3 miles steady, and then 3 miles full out.
(c) Run up and down a long hill where the ASCENT equals half the distance of the race i.e. 4.5 miles of uphill running; 4.5 miles jogging back down.
(d) One track session at one pace faster than race pace and equal to half the race distance. Full race distance for women. For men, train at 5km pace; women at 3km pace. Boys and Girls should train at 1500 pace.
(e) An intermediate, steady run, between (a) and (b) listed above. i.e. 13 miles for men, 8 for women.
In October/November, start with HALF above. In December/January, increase to THREE-QUARTERS above. February/March, complete FULL schedule. For men, this should be (a) 18 miles slow; (b) 9 miles acceleration run; (c) 9 miles hill work; (d) 8 x 1600 at 5km pace, 200 jog or 4 x 2 miles at 5km pace, 400 jog; (e) Half marathon steady run.

I also recommend a 'crescendo' method of racing to avoid peaking too soon. For example - October: one race; November: 2 races. December: 3 races. January: 4 races. February: Trials. March: IAAF World XC Championships!

I'm openly skeptical of those who firmly believe that only big mileage is the secret to successful cross country racing. A few years back, Tim Hutchings won an international XC race on the continent and discussed training whilst relaxing that evening with his British colleagues. All his rivals were logging around 100 miles per week and were amazed when Tim stated that he was currently on 50! Some called him a liar and others warned him that his lack of an endurance base would not allow him to keep on winning as the season progressed. Well, by the time of the National Hutchings ran away from the lot of them - his weekly mileage by then was 70.....

Steady running can be structured as you like, but I firmly believe that speed sessions and hill repetitions are 'the real stuff'.

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10

Pollution dangers By Greg Moon

Many athletic events are held at altitude and the effects of competition there well documented. However, competition and - more especially - training in a modern polluted society are not so well appreciated. At rest one expects to breathe some 10 litres of air a minute. This can easily rise to 60l during exercise - and figures as high as 200l are not uncommon among the elite, thus making the pollution dosage much higher. A marathon runner in the course of 2 1/2 hours consumes what would ordinarily represent an average tidal volume for two months. Accordingly, if pollution hampers the sedentary then it will be even more significant to the serious sportsperson; sometimes the effects are only noticeable in impaired performance.

There are two types of pollutant: primary, such as CO, SO2, NO, and Pb - which undergo little or no chemical change from source to receptor, and secondary, such as O3 - which form a chemical reaction in the atmosphere. The main source of pollutants is the combustion of fuels. Lets look at each pollutant individually.

SULPHUR DIOXIDE (SO2)

This is a problem associated with heavily industrialised areas, or domestic winters, as it is derived from fossil fuels, such as coal. It leads to watery eyes, pain in the chest midline, a burning throat (pharyngitis) and bronchoconstriction, it stimulating receptors in the larynx, trachea and bronchi. Consequently, asthmatics are the most badly affected. At rest, or exercising at a low level, 99% of the SO2 can be removed in the nasal passages. However, as one can only breathe 30 litres a minute through the nose, the remainder of inspired air has to travel through the mouth down to the lungs direct and unfiltered, thus removing any defence mechanism against the water soluble SO2 and resulting in a high delivery of the gas to sensitive target sites in the respiratory system. Maximum effects are reached after only 4 to 10 minutes - and there is a decreased resistance with continued exposure.

Air Quality Standards (AQS), measured in parts per million (ppm) of the surrounding air, define levels of pollutant which can affect exercise. In the case of SO2 measurements of only 0.14ppm for 1 hours exposure are considered safe. 0.5 ppm (for those with asthma - Lynn, 1983) to 1.0ppm are acknowledged as affecting exercise. Indeed, 1 to 2 ppm will touch everyday non-exercising activities. With cold air the required SO2 levels reduce markedly to 0.25 ppm. Wind can remove SO2 quickly and rain washes it out, thus substantially reducing its levels. Also, SO2 induced bronchoconstriction can be inhibited by prior administration of the drug cromolyn sodium. (Pierson found 15% of the 1984 US Olympic team had some degree of exercise induced bronchospasm). As ever, though, check that any administered drug is not a banned substance.

SOOT

This comes from smoke, which consists of carbon particles. The bronchi, at the centre of the lungs, constrict in response to soot in the lungs and there can be as much as 30% narrowing for 2 hours after one cigarette.

CARBON MONOXIDE (CO)

This comes mainly (60%) from the incomplete combustion of petrol and also from gas consumed in the home, as well as inhaled tobacco smoke - and exposure to products like paint and varnish removers. The effects are symptomless, it being an odourless, colourless, non-irritating gas, and so no pain is associated. It is readily absorbed and combines with haemoglobin (Hb) (250 times easier than oxygen - O2) to form carboxyhaemoglobin (COHb), which interferes with tissue oxygenation. Conversely, it is very reluctant to be released, most returning to the lungs and only a little being expired. Thus CO recirculates with the added ingestion of further doses with each breath. Additionally, it is questionably the major cause of coronary heart disease.

AQS require no more than 9 ppm in an 8 hour period, or more than 35 ppm in one hour for a healthy environment, (normally 3-4 ppm are present). However, heavy traffic on motorways and in large towns easily record 50 to 100 ppm. In fact, in tunnels such as in Birmingham city centre 500 ppm are common at rush hour! (car exhausts produce 5,000 to 70,000 ppm). Simply running as far away from the kerb as possible can substantially reduce these figures, as variations of 0 to 100 ppm can be measured within 10 feet of each other on busy city streets.

Go to competition early and by train, if possible, as one hour in heavy traffic can take 8 hours to clear the system. In winter the problem is exacerbated as car heaters take in polluted air from outside and circulate this around its interior.

There is a linear relationship between increasing blood levels of COHb and a fall in maximum aerobic capacity (VO2 max) - (.91x + 2.2 - Raven, 1974). Thus, 50 ppm for 4 hours leads to a drop of 2 to 3% in functioning Hb levels and 100 ppm a decrease of 4%. Training away from peak rush hours makes sense. (those with low oxygen carrying capacity, such as CHD patients - and non-exercising are badly affected).

Low levels of COHb have resulted in significantly reduced treadmill test times (Raven). However, it is not yet established if these low levels of circulating COHb are sufficient to interfere with anaerobic metabolism and hence performance. 5% COHb levels do, however, significantly increase the oxygen debt in acute work.

Sub maximum work (40 to 60% VO2 max) of short duration, with VO2 levels below 1.5 l/min and below 15% COHb sees little effect on energy production and ventilation - but the submaximal heart rate is significantly increased.

As work loads increase in relation to maximum capacity, so ventilation volume increases from an increased respiratory rate - similar to altitude hypoxia. Ekblom (1972) has reported a decrease in mean exercise time to exhaustion from 332 to 244 seconds for a 7.1% increase in CO levels.

Additionally, the CO in tobacco (400ppm when it reaches the lungs) leads to an 8% reduction in Hb levels - responsible for moving oxygen to the muscles - in the blood - ie, there is a left shift in the oxyhaemoglobin dissociation curve. In the heavy smoker O2 carrying capacity can be reduced by as much as 15%. 10-12 cigarettes per day result in a 4.9% increase in COHb, 15-25 a 6.3% increase, and 30-40 a 9.3% rise. Even passive smoking, by being in a smoke filled room, has the effect of actually smoking one cigarette every hour there, so raising the venous COHb levels by 2%. As it takes at least 4 hours to regain optimum Hb levels it is clear the O2 transport system, so carefully built up with long and hard training, can be severely affected just travelling to competition with a bus full of non-athletic supporters.

CO also combines with myoglobin, which reduces O2 diffusion to the mitochondria, thus increasing ventilation in the heart muscle. COHb levels correlate closely with the development of myocardial infarctions, angina pectoris and intermittent claudication. These are 21.2 times more likely with COHb levels >5% as opposed to <3%. Heavy smokers expose themselves to 8 times the CO levels allowed in industry. Angina patients cannot adequately increase coronary blood flow while exercising and increased COHb gives reduced O2 to the myocardium - so demand exceeds supply of O2, resulting in angina earlier and with less work. Additionally, the ventricular fibrilation threshold is reduced - so predisposing to sudden death.

In view of the aerobic requirements of elite performers only small increases of CO loading could prove detrimental to optimum cardiac function and O2 delivery - so impairing anaerobic energy production. Raven et al (1974) found significant performance decrements with a 2.1% increase in COHb. Equally, fine cognitive skills, such as required in squash, are noticeably downgraded, with just a 2.5 to 3% drop in Hb - i.e. giving errors in judgement. Heavy exercise can speed up dissipation rates eight times, so another advantage of early arrival before competition is the ability to fit in an easy additional run.

OZONE (O3)

Hydrocarbons, which are present in fridges and aerosols react with Nitrogen Dioxide (NO2) and Nitrogen Oxide (NO) and O2 in ultra violet light (uv) to form Ozone. The Ozone layer is a filter for uv and its reduction is giving cause for concern but heavy local concentrations in some areas, with severe damage to the respiratory system, are being reported. The worst conditions are between 11am to 4pm on windless, hot, sunny days. Cities such as L.A. and Soeul, which are often covered by light cloud, are warm, surrounded by hills, and so particularly prone to adverse conditions.

Levels of 0.3 ppm affect the moderately active, (Hazucha et al, 1973, reported a marked decrease in pulmonary function with light exercise), are easily attained in London and Birmingham in the Summer. Only 0.18 ppm is required to decrease performance - by 10% in one hours exercise. Decrements in performance are greater in females. US AQS of 0.12 ppm for 1 hour have been set - and exposure to levels greater than 1 ppm can cause pulmonary oedema and death.

Laboratory work (Adams, 1983) has taken 10 runners in conditions of 0.2ppm exercising at only 35% of their individual VO2 max. Of these only 6 were able to warm up for half an hour then work at this very low level and most demonstrated signs of toxicity - congestion, wheezing, headache. O3 poisons cells, affecting muscle and slowing down performance. However, it is possible to acclimatise - 4 full days may be sufficient. Equally, it is possible to be selective over training times. Higher O3 levels are often intermittent, so it may require several weeks exposure to fully adjust to the conditions. Remember of course that increased O3 is apparent in warmer weather, itself a limiting factor - and one that requires acclimatization.

Bedi's 1983 tests with cyclists required work at 75% VO2 max for 60 mins at exposure to 0.21 ppm. Chest discomfort was reported when "breaks from the pack" were made and only three of the seven were able to perform maximally. Also, before the 1984 L.A. Games Olympic cyclists exercising at only 0.12 ppm O3 returned significantly reduced performances.

A modest impairment in pulmonary function is associated with endurance. Ozone decreases vital capacity, maximum expiratory flow, and pulmonary diffusing capacity and increases tracheal irritation. Folsinbee and Raven (1984) have recorded pronounced responses on max O2 uptake and reduced lung function in heavily exercising subjects in events in excess of 30 mins at 0.2 ppm exposure.

DUST

Dust of a size able to enter the respiratory tract affects performance. The amount entering increases with the respiratory rate, which is a function of work rate.

LEAD (Pb)

This is higher on busy motorways, by as much as 10 times - though one hopes the move to unleaded petrol will see these figures reducing. Whilst it does not affect exercise it is a heavy metal the body cannot dispose of. It simply stays there and kills (especially) nerve cells. Particularly at risk are children, whose growing nerve endings are affected, and considered opinion attributes hyperactivity to this. Also, the toxicity of CO may be further enhanced by a possible synergism with lead, lead poisoning being characterised by abnormalities of the O2-transporting red cells, resulting in anaemia, so attacking the same mechanism upon which CO acts toxically.

ALLERGIES

Allergies themselves, such as hay fever and sinusitis, can be exacerbated by exercise, especially endurance, with the high inspiratory volumes of air attained.

CONCLUSIONS

The worst hit are those whose events last longer than 30 minutes - or who require a prolonged warm up exposed to the prevalent conditions followed by a shorter competition.

Whilst there is a natural reluctance for elite performers to submit to tests, it is clear from the foregoing the conditions to avoid in training where possible. It may be necessary to compete under the same conditions as the opposition but clearly there is much the thinking athlete can do to rise above the oppposition. Travel early to competition, (the night before if a long journey); go by rail rather than road; if the day is sunny and hot make the warm up shorter and stay indoors, (away from smokers). Try to breathe through the nose. Most are looking for tiny pieces of improvement to give the edge; care in this direction is far more significant than that. Endurance events in polluted environments are the most severely affected. Little information is available, however, on the effects on anaerobic power events such as the throws or sprinting.

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MODEL PERFORMANCES FOR DISTANCE RUNNERS

by R. Travin, et. al.

The evaluation of the development of distance runners after they have reached 19 years of age is based on model performances over several selected distances. The models are divided into three groups according to the demands made of a particular distance.

- 400-800m, requiring above average speed.
- 800-1500m, requiring speed and specific endurance.
- 1500-5000m, requiring less speed but a high level of general endurance.

The model performances, presented in Tables 1, 2, and 3 are meant to guide coaches in the selection of the most suitable distance for a particular athlete, as well as making adjustments to the training methods employed, according to shortcomings revealed in comparison with the targets set in the tables.

TABLE 1

400-800m

Test	Class 2	Class 1	Candidate	Master
100m	11.90 ± 0.2	11.5 ± 0.2	11.3 ± 0.2	11.0 ± 0.1
600m	1:27.0 ± 1.5	1:23.0 ± 1.5	1:20.0 ± 1.0	1:18.0 ± 1.0
1000m	2:40.0 ± 3.0	2:32.0 ± 2.0	2:28.0 ± 1.0	2:24.0 ± 1.0
3000m	9:33.0 ± 14.0	9:09.0 ± 17.0	8:49.0 ± 9.0	8:35.0 ± 7.0
400m	53.8 ± 0.8	50.9 ± 0.7	49.1 ± 0.7	47.8 ± 0.6
800m	2:02.0 ± 2.0	1:55.0 ± 1.9	1:50.0 ± 0.9	1:47.0 ± 0.6

TABLE 2

800-1500m

Test	Class 2	Class 1	Candidate	Master
100m	12.0 ± 0.3	11.7 ± 0.2	11.4 ± 0.2	11.2 ± 0.2
400m	56.0 ± 1.0	52.0 ± 1.0	50.0 ± 0.5	49.0 ± 0.5
600m	1:27.0 ± 2.0	1:24.0 ± 1.0	1:21.0 ± 1.0	1:18.0 ± 1.0
1000m	2:38.0 ± 3.0	3:32.0 ± 2.0	2.27.0 ± 1.0	2:23.0 ± 1.5
1200m	3:17.0 ± 4.0	3:08.0 ± 3.0	3:01.0 ± 2.0	2:57.0 ± 1.5
3000m	9:18.0 ± 11.0	8:38.0 ± 10.0	8:23.0 ± 7.0	8:12.0 ± 7.0
5000m	16:15.0 ± 23.0	15:10.0 ± 17.0	14:34.0 ± 13.0	14:05.0 ± 13.0
800m	2:01.0 ± 2.0	1:55.0 ± 2.0	1:50.0 ± 1.0	1:48.0 ± 0.5
1500m	4:13.0 ± 5.0	3:56.0 ± 3.5	3:46.0 ± 2.0	3:41.0 ± 1.0

TABLE 3

1500-5000m

Test	Class 2	Class 1	Candidate	Master
100m	12.7 ± 0.4	12.1 ± 0.2	11.8 ± 0.3	11.6 ± 0.2
400m	57.0 ± 1.0	54.0 ± 1.0	51.0 ± 1.0	50.0 ± 0.5
1000m	2:39.0 ± 4.0	2:31.0 ± 3.0	2:29.0 ± 2.0	2:25.0 ± 2.0
2000m	5:53.0 ± 7.0	5:35.0 ± 5.0	5:18.0 ± 3.0	5:13.0 ± 3.0
3000m	9:13.0 ± 10.0	8:31.0 ± 10.0	8:12.0 ± 5.0	8:01.0 ± 5.0
800m	2:03.5 ± 2.0	1:58.0 ± 2.0	1:54.0 ± 2.0	1:51.0 ± 1.0
1500m	4:11.0 ± 4.0	3:56.0 ± 3.0	3:47.0 ± 2.0	3:42.0 ± 1.0
5000m	15:45.0 ± 20.0	14:52.0 ± 12.0	14:19.0 ± 11.0	13:47.0 ± 11.0

Legkaya Atletika (USSR)

ACHILLES WRITES.

INDIAN MYSTERY

Mysterious goings-on surround HARRY WILSON and the Indian Sports Council. Wilson has toured the vast continent on several occasions, lecturing on distance running, and his words and guidance have been well received. However, early in 1990 the Amateur Athletic Federation of India informed Wilson that he would not be permitted to contact the Indian team in person should he travel to Beijing, China, for the 1990 Asian Games (September 27 - October 3).

We understand that Wilson's reply was to threaten legal action. ("I will sue!" roared Boss Hogg). Achilles says: Come on, Harry, let's have the full story....

BATTY BAWLS AGAIN

Yes, the Thurrock thunderer has been at it again. Irked that EAMONN MARTIN was not allowed to double up in Split, hattling MEL BAITY regaled British journalists with tales of the wonderful potential and training exploits of his 'boy' at the European Championships. Amazingly, some press men are still taken in by this. "If it needs 13:05 to win, I think Eamonn is capable of that", he told DAVID POWELL of THE TIMES. "The training he did last week was the best he has done in his life. He is in great shape....." etc

Once again, all Batty did was set Eamonn up for the chop. Martin went into Split without one fast race under his belt all year. True, injuries have slowed his progress, but even when he won the Commonwealth 10,000m in January he withdrew from the 5000m due to a cold - after persistent requests to AAA selectors that he be allowed to double up.

I do not understand this high estimation of Eamonn Martin. Frankly, the man is overrated on the basis of one solo 10,000m in Oslo two years ago, and persumably his ability to tack a sub 26sec last 200m on the end of slow run races. His major Championship record is not particularly noteworthy, and in his fastest 5000m (13:17.84 in 1989) he was detached from the pace over the final kilometre. He has never won a sub 13:20 race.

In the Split final, he was never with it, falling off the pace after 3000m in 8:09 whilst GARY STAINES went on to secure a silver medal and give winner SALVITORE ANTIBO quite a fright. I cannot quite fathom why this was such a surprise to many of the British press : Staines was ranked third in Europe going into the Championships with 13:14.28 in Zurich, and had been running personal bests at all distances all year. And his finishing speed is improving all the time.

But of course, his coach does not booze with gullible British reporters.

GREAT TURN-OUT AT HOLMAN'S FUNERAL

Over 150 of the athletic faithful turned out to pay their last respects to former National Distance Coach RON HOLMAN at his funeral in Eltham on September 7th. These included clubmate STEVE BACKLEY, SCAA Secretary ERIC NASH, and staff coaches HARRY WILSON and NEVILLE TAYLOR. A notable absentee was UK Director of Coaching, FRANK DICK.

SUPER SESSION BY ANTIBO

Double European Champion SALVITORE ANTIBO is a tough Sicilian. He's not afraid to lead in races, and he can also sprint with the best of them at the finish, as he amply demonstrated in Oslo and Split last Summer. But get this - five days before the European 10,000m he was observed putting himself through the following training session: 20 minutes warm-up; then 3000m in 8:00.0; five minutes jog; 3 x 1000m in 2:35 with 200m jog; five minutes jog; 2000m in 5:17; five minutes jog; 5 x 400m in 59/60sec; 10 minutes warm-down. He thus ran at 10,000, 5000 and 1500 pace in one session, totalling 10,000m in reps!

Antibo then took active rest by running 10km easily every day until race day. The rest is history.

UK COACHING SHAKE-UP?

Rumour has it that the UK Coaching Scheme is due for a cabinet reshuffle. Heads could roll in this night of the long knives, but highly touted for a major promotion amid all the carnage is NORMAN BROOK, National Coach for Northern Ireland. Seems that Norman has won many brownie points with Chief Honcho Herr Dick. Watch this space.

MOON RESEARCHES WAAA

Starting a major thesis on the history of the Womens' AAA is former BMC Secretary, GREG MOON (40), who has just graduated from Birmingham University as a mature student.

Greg has been unable to obtain a grant, and starts his unfunded research at Whitelands College, Putney in November. He anticipates many months of plodding through library cuttings as the records of the first few years of the Association are skimpy due to several minute books being mislaid in a taxi back in 1931. When Moon approached WAAA Secretary MAREA HARTMAN for guidance, he received a frosty response until he stated that her colleague VERA SEARLE had given the project her blessing. He was grudgingly told that he could go ahead. But not to expect any dosh.

STIRRINGS IN THE MIDLANDS

One Midlands member stated that he was paying his subs reluctantly as no races had been organised in his area. This is not quite true. Member JERRY MURLAND took the trouble to put on three races at Coventry in May in spite of taunts from a local female coach. The womens' 10,000m was won by MARY DONOGHUE from Dublin in 35:00.4 and the mile by ANDREA WALLACE from Torbay in 4:38.9. (Earlier, Wallace had taken the BMC Womens' 5000m at Crystal Palace in a worthy 15:47.9 from a good field). Unfortunately, the mens' mile at Coventry had to be cancelled because several athletes pulled out at short notice. The apathy factor appears to be high in the Midlands: several women missed being towed to a fast time by Wallace, who does not require pacemakers, and it appears that the men were just not prepared to stir themselves.

Murland hopes to promote more races next year. If you are in the area, how about giving him some support? For details, contact Jerry Murland at 113 Stoney Road, Cheylesmore, Coventry CV3 6HY. Don't be shy.