Renato Canova training info. Mostly 800m training but also general training info.
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Yes, there is a big difference between "performance" and "specific performance", like there is big difference between "general shape" and "specific shape".
When we speak about top shape in specific competitions, we speak about the ability to reach 100% of the potential in THAT EVENT.
Under this point of view, for example, if you are a marathon runner, and you are able to improve your PB in 1500m two weeks before the marathon, this means YOU ARE NOT IN SHAPE FOR THE MARATHON, because your training went in different direction.
We speak about top athletes, of course, not about amateurs. In their case, it's possible that, increasing mileage at slow pace, and increasing speed with short intervals, they can be able to improve all their PB.
But the case of top runners is very much different.
The key of training is :

A) To identify his SPECIFIC TRAINING (specific because is directed to one specific event)

B) To increase THE VOLUME OF HIS SPECIFIC TRAINING

C) To prepare the athlete, using FUNDAMENTAL and SPECIAL TRAINING, to reach the above goal (to increase the volume of specific training)

Under this point of view, IN ALL THE EVENTS OF ENDURANCE, the specific training is something including various distances run at a speed between 95% and 105% of the speed of the race.

I want to give some example :

for athletes having a PB of 3'45" (1500, speed 15" every 100m, specific speed between 14"2 and 15"8 every 100m :

tests of 200m (28"4), 300 (42"6), 400 (56"8), 500 (1'12"), 600 (1'26"2), 800 (1'54"6) and 1000m (2'23") at 105%, stimulating specific speed,
test of 600 (1'39"), 800 (2'10"6), 1000 (2'42"2), 1200 (3'13"8), 1600 (4'21"2), 2000 (5'24"4) at 95% stimulating the Aerobic Power)

for athletes having 27'30" in 10000m (speed 16"5 every 100m, specific speed between 15"7 and 17"4 per km :

test of 600 (1'34"2), 800 (2'05"6), 1000 (2'37"), 1200 (3'08"4) at 105%, stimulating specific speed

test of 1000 (2'54"), 2000 (5'48"), 3000 (8'42"), 4000 (11'36") at 95% stimulating the Aerobic Power

long run of 6-10 km at 95% stimulating the Threshold

long run of 12-25 km at 90% (in this case 3'01"5 per km) stimulating the ability in extending the duration at the speed of Aerobic Power

In this training phylosophy, we say that EVERY SPEED FASTER THAN 105% OF THE SPEED OF THE RACE must be considered as SPEED, and is the "cherry on the cake", but is not the cake.

Of course we use also maximal speed, but never as one of the most important means of training.

One simple question : what do you do with a high speed, when you are not able to stay with the best athletes till last lap ? It's clear that, till when you are not one of the elite group in your distance (as endurance), if you want to be competitive the goal is to enhance the average of your speed, and this is possible increasing the Aerobic Power, not the speed.

Among athletes having the same level of endurance, the faster wins. But NEVER the faster wins, if his level of endurance is lower than the level of some other competitor.

The event of 800m has some more connection with the high speed of 400m. In this case, it's clear that you need also to use full speed. But in the case of very fast runners (for example, David Rudisha), the average for every 100m is already very fast (12.6), and 105% is 11"9, that is normally used for distances till 400m (23"8 / 35"7 / 47"6), because it's not possible running longer distances at the same pace (that speed for 500m means 59"5 that is the World Best).

In the case of Rudisha, he only occasionally runs faster than these times, and his big improvement during the last 3 years is due to a big increase in specific workouts, supported by a very much better Aerobic Power (he was very week under this side, 4 years ago).

Also athletes like Joaquim Cruz (1'41"77), or Steve Cram (1'42"88), used maximal speed only occasionally.

I normally use,long all the season, short sprints uphill (80m) at max intensity, with the goal to recruit the higher percentage of fibres, and I think it enough for a specialist, but never go for something shorter than 150m on track at max speed.

Also the specific speed endurance using short tests (for example, 3 sets of 6 x 60m + 2 sets of 5 x 80m + 1 set of 4 x 100m) is carried on at 95% of the max speed of the athlete (in this case we don't consider the percentage of the speed of the race, but, more simply, the percentage of the max personal speed).

MR: I've seen in your schedules the use of very short hills. Can you talk about the thought behind that?
RC: Yes. Ethiopians went normally for short hills. Not just hills — Gebrselassie went for 60 meters sprint on the track with spikes, twice a week, so he build his speed, and this is one of the big differences between Ethiopians and Kenyans, because the Kenyans never, never use speed. For them, speed is 200 meters, never maximum speed. The idea of Kenyans is always to relax, run relaxed, so maximum speed is something different.

We have very good improvement with these. It's difficult to explain to a marathon runner to go for very short sprints, hilly, with the mentality of sprinting, because many go for maybe 800 meters, but a sprint is a sprint. You must start hungry, like a sprinter, in an explosive way, not taking care for recovery. Because the effect is that we want to recruit the most part of the fibers of every muscle, and the only way for recruiting these is full intensity. Our engine doesn't work like the engine of a car. If I have an engine of a car going for 5,000 revolutions,

and 200 kilometers of speed, and I want to go at 100 kilometers of speed, revolution can be 2,000, but the way of working is the same. In our engine, the situation is different. Could be that I have a muscle of 100 fibers. If I go for maximum speed, I use all 100 fibers. If I go five kilometers, I use 20% of these fibers, always the same 20%. If I go a little bit faster, maybe 50, maybe 60, but when I never go for max intensity, I have a big percentage of fibers, maybe 40 percent, that are not activated. So when I need to use these fibers — because I am in the final sprint or because I finish the storage in the other fibers — I need for the last five kilometers, the last two kilometers, I need to take something. These faster fibers are not good for marathoning, but inside there is something I can use. The only way for using these is by doing short sprints.

To explain to a marathon runner that if he goes two times a week for a shorter sprint is good for improving endurance or resistance is difficult, but it's true.

MR: So this is like 60 meters uphill?
RC: Ten to 15 seconds without any care of recovery. But also good gradient. For example, a gradient like that one is good. [Note: At this point, Canova pointed to a very steep hill behind us.] Not only two or three percent. Two or three percent is something different, maybe good if you are an 800-meter runner, so you can build your specific strengths.

I don't use weights normally with my athletes. Sometimes we use a ramp of 15% gradient, maybe 30 meters; this 30 meters takes you 10 seconds. It is like using half a squat, but you're using a more dynamic weight because you are running; the weight is the weight of your body and is specific.

Working on the hills we can have a lot of variations. I remember once [on the letsrun.com message board], I made an example, hills of 400 meters. I hear back, 'I have not hills of 400 meters, only 300 meters. What am I to do?' Use a fantasy. I want to tell you something that happened 30 years. Bud Winter was the coach of [1968 Olympic 200m champ] Tommie Smith. And I was a young coach in 1974, and we had a meeting with Bud Winter. The coach explained that Smith goes for strength on the hill for 87 yards. We were all wondering, 'Why? What is 87 yards? Maybe 80 meters. This takes him maybe 10, 11 seconds. Okay, why this? What is it for?' Two hours of discussion. Then we ask the coach, 'What is the reason for this? Why 87 yards?' He said, 'Because at 88, the downhill starts.'

So many times we want to be too scientific in everything. You use what you have. This guy had a hill that was 87 yards. Percy Cerutty used the dunes because he had the dunes. When we write about the system that has produced something for an athlete, and people without a fantasy tries to follow, no. If I am in the forest and I want to use some weight, and I find some tree, 20, 25, 30 kilos, I cut it, I use it, but it's not that this is the best way that others should copy. So I think we must have more adaptations in these cases. I think this type of flexibility is one of the most important things for a coach.

And my impression is that normally American coaches have no flexibility. It's like in Italy — this is the system, blah, blah, blah, blah, blah. When you have a group, maybe one needs to rest today, one needs to rest another day. You must know, what is the need of every runner at every moment. You have good athletes, and I think many of them are very stimulated. But not always training harder is training better. This is important. Because you must have very much care about recovering, because when you train hard for a period, you must recover so that when you have the super-compensation, you can start again another period from a higher level. This is the secret of training. But it may be that some time only two days of tough work when you are already tired can destroy you, and for two months you are not able to do what you should do. This is probably what happens to your athletes, because in Olympics, nobody was good. I think that in approaching Olympics with this mentality of always improving [aggressiveness] in training, training, training, so no recovery, you were completely exhausted. Is a problem of balance in this case.

To enjoy training doesn't mean to train easy, but to train with the max motivation. This is possible when the athlete has full confidence in his training.

Every top champion well knows that SOME session of his training must be very, very tough. But, when this is HIS PERSONAL CHOICE, coming from his mind because he is fully confident in what is doing, he can accept, and also enjoy, the highest level of sufference.

The problem starts when some athlete fears a very tough training, and when his type of training brings him to an exhaustion.

In order to avoid this "refuse" of hard training, the solution is to use a very big modulation. The athletes must be mentally and physically fresh, when have to go for the hardset workouts, but, without them, nobody can become a top champion.

The top champion enjoy to win, and well know what has to do for winning. And enjoy to test himself at the higher level of sufference. But doesn't enjoy running as an amateur, because in his mind this is to waste his time.

So, it's important to understand the difference between running easy (that is no training, but fitness) and training very hard. The real problem is how to distribute the hard training in a project. Too much intensity (not in one single session, but with continuity) brings every athlete to a status of reject hard training, because ALWAYS mentally and physically tired, and in this way is no more possible to produce high quality in his training (a lot of fatigue for bad results).

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When we speak about Middle and Long Distances, from 800m to Marathon, we always must remember that are event of extension. Better, events of SPECIFIC EXTENSION.

We can classify the type of training we have to use in very simple way, looking at the speed, the duration and the goals :

1) REGENERATION, with the goal to better and faster recover the real training

2) FUNDAMENTAL, having the goal to create the aerobic base for putting in training workouts of higher intensity

3) SPECIAL, being the DIRECT SUPPORT of the Specific Training

4) SPECIFIC, that HAS DIRECT INFLUENCE on the performance

The problem for every athlete is :

HOW IS IT POSSIBLE TO BETTER SUPPORT THE SPECIFIC TRAINING, and the percentage of it inside the global volume we use.

REGENERATION : has the goal to better and faster recover the effects of fatigue after tough training. If the normal basic level of lactate in an athlete is 1.2 / 1.5 mml/l, after a hard workouts (expecially in the lactic zone) the level remains higher for 2-3 days, if the athlete goes to rest. Instead, after an EASY RUN, he is able to remove the residual lactate, and his lactic level can decrease under 1.0 mml/l, with a feeling of wellbeing.

For every event we have different speeds of REGENERATION, but normally the right speed is about 60-70 % of the speed of the Threshold. So, in case of a top Marathon runner, having a Threshold about 2:48 per km, we can speak of Regeneration when he runs slower than 3'40" / 3'45". In this case, 3'45" or 5' have the same effect, but many times running too slowly provokes mechanical problems.
Instead, for a good 800m runner (1'44") coming from 400m, and having a Threshold of 18

km/h (3'20" per km), Rigeneration is running slower than 4'10" / 4'20", but, because the biomechanical difference between the speed of the race (13" every 100m) and the speed of regeneration is very evident, sometimes is better to use other systems (pool, sauna or other situations not involving wrong running technique).

FUNDAMENTAL : We call this BASIC AEROBIC TRAINING. The goal is to be the support for evefry workout of higher intensity.

800m :
Duration 20' - 40'.
Speed : 1,4 - 1,5 slower than the Race Pace (RP)
Examples : Athlete 1'44" (RP 13" per 100m) : 18"2 - 19"5 per 100m (3'02" - 3'15" / km)
Athlete 2' (RP 15") : 21" - 22"5 (3'30" - 3'45")

1500m :
Duration 30' - 50'
Speed : 1,3 - 1,4 slower than RP
Examples : AT 3'30" (RP 14") : 18"2 - 19"6 (3'02" - 3'16")
AT 4' (RP 16") : 20"8 - 22"4 (3'28" - 3'44")

5000m :
Duration 45' - 1:10
Speed : 1,15 - 1,25 slower than RP
Examples : AT 13' (RP 15"6) : 17"9 - 19"5 (2'59" - 3'15")
AT 15' (RP 18") : 20"7 - 22"5 (3'27" - 3'45")

10000m :
Duration 1 hr - 1 hr30'
Speed : 1,15 - 1,25 slower than RP
Examples : AT 26'40" (RP 16") : 18"4 - 20" (3'04" -3'20")
AT 32' (RP 19"2) : 22" - 24" (3'40" - 4')

HM :
Duration 1 hr 20' - 1 hr 40'
Speed : 1,15 - 1,25 slower than RP
Examples : AT 59'47" (RP 17"):19"5 - 21"2 (3'15" - 3'32")
AT 1:10:40 (RP 20") : 23" - 25" (3'50" - 4'10")

MARATHON :
Duration 1 hr 45' - 2 hr 30'
Speed : 1,1 - 1,2 slower than RP
Examples : AT 2:05'(RP 17"7): 19"5 - 21"2 (3'15" - 3'32")
AT 2:49' (RP 24") : 26"4 - 28"8 (4'24" - 4'48")

How is possible to see, the speed of 800-1500 are the same, the speed of 5000 and 10000 are very close, and the speed for HM and MAR are the same. This means that, with a correct methodology, WE CAN HAVE A STRATEGY FOR MOVING IN TWO YEARS FROM ONE DISTANCE TO THE LONGER USING THE SAME SPEED BUT EXTENDING THE DURATION.

The BASIC AEROBIC MILEAGE is the first step for building up the ENDURANCE. We need to increase it during the first 3-5 years of career, after is no more so important.

The next step regards the SPECIAL ENDURANCE.

SPECIAL TRAINING : is the training that DIRECTLY is joined with the SPECIFIC Training.

We have 2 branches of SPECIAL TRAINING :

a) Biomechanical support (type of strength connected with the event, and speed faster than 10% of the speed of the event)

b) Bioenergetic / Methabolic support (extension around the 90% of the speed of the event).

We can give some example of the SPECIAL speed for event :

800 (Athlete 1'44") : 28"/29" (200), 56"/58" (400), 1'10"/1'13" (500), 1'24" / 1'27" (600), 2'28" / 2'32" (1000), 5'20" / 5'30" (2000), Competitions of 1500m

1500 (Athlete 3'30") : 1' / 1'02" (400), 1'15" / 1'18" (500), 1'30" / 1'33" (600), 2'32" / 2'37" (1000), 5'20" / 5'30" (2000), 8'15" / 8'30" (3000), 4 km continuous in 11', competitions of 3000 / 5000m

5000 (Athlete 13') : 62" / 64" (400), 1'32" / 1'36" (600), 2'40" / 2'45" (1000), 5'30" / 5'40" (2000), 8'25" / 8'40" (3000), 8-12 km continuous run at 2'55" / km, competitions of Cross and 10000m

10000 (Athlete 26'40") : 64" / 66" (400), 2'45" / 2'50" (1000), 5'35" / 5'45" (2000), 8'30" / 8'45" (3000), 15 km continuous run at 3' > 2'55", competitions of cross and HM

HM (Athlete 60') : 2'50" / 2'55" (1000), 5'45" / 5'55" (2000), 8'45" / 8'55" (3000), 25 km continuous run at 3' /km, competitions of cross or pacing 25-30km in a Marathon

MARATHON (Athlete 2:05') : 2'42" / 2'45" (1000), 5'30" / 5'40" (2000), 8'20" / 8'35" (3000), 14'10" / 14'30" (5000), 20km continuous run at 2'55" / 3', 45-50 km continuous run at 3'20", competitions of 10000m / Cross / HM.

How is possible to see, FOR THE MARATHON SPECIAL TRAINING IS SOMETHING SHORTER AND FASTER THAN THE MARATHON.

For all the other events, is something Longer (as global volume) and slower than the Race Pace

SPECIFIC TRAINING : is all the Training including speeds between 95 and 105% af the speed of the race. For a middle distance runner, SPECIFIC is TO RUN, and nothing else. When we speak about exercises, gym and other training of support, we speak about FUNDAMENTAL or SPECIAL TRAINING, useful for bettering the SPECIFIC.

Which are the specific speeds for events ?

800m (1'44") : 12"4 - 13"6 per 100m
1500m (3'30") : 13"3 - 14"7 per 100m
5000m (13') : 14"8 - 16"4 per 100m
10000m (26'40") : 15"2 - 16"8 per 100m
HM (59'47") : 16"2 - 17"8 per 100m
MAR (2:05') : 17" - 18"7 per 100m

If we have to give some example, for the different events, we can show some workouts as follows :

800m

- 2 sets of 5 x 300m in 39" (rec. 1' between tests, 4' between sets)
- 4 x 400 in 51" rec. 5' / 6'
- 3 x 600 in 1'17" rec. 6' / 8'
- 1000 in 2'17" + 400 in 51" + 200 in 24"5, rec. 8'

1500m

- 2 sets of 8 x 300m in 40" (rec. 45" between tests, 4' between sets)
- 8 x 400 in 56" rec. 2'
- 5 x 600 in 1'24" rec. 3' / 4'
- 3 x 1000 in 2'20" rec. 6' / 8'
- 2000 in 4'55" + 1000 in 2'22" + 600 in 1'24", rec. 6'

5000m

- 15 x 400 in 60" rec. 45"
- 10 x 600 in 1'30" / 1'32" rec. 1'30" / 2'
- 6 x 1000 in 2'32" / 2'36" rec. 2' / 3'
- 3 x 2000 in 5'15" / 5'20" rec. 3' / 4'
- 3000 in 8' + 2000 in 5'15" + 1000 in 2'32", rec. 5' / 6'

10000m

- 15 x 600 in 1'33" / 1'35" rec. 1'30"
- 10 x 1000 in 2'36" / 2'38" rec. 1'30" / 2'
- 4 x 2000 in 5'15" + 1 x 1000 in 2'30" rec. 4'
- 3000 in 8' + 2 x 2000 in 5'20" + 4 x 1000 in 2'38", rec. 3' between 3000 / 2000, 2' between 2000, 1'30" between 1000

HM

- 7 x 2000 in 5'35"/ 5'40" rec. 400m in 2'
- 5 x 3000 in 8'25" rec. 1000m in 3'15" / 3'20"
- 3 x 5000 in 14'15" rec. 1000m in 3'20"
- 15 km long continuous run at 102 % HMP
- 25 km long continuous run at 97% HMP

MARATHON

- 6 x 4000 in 11'40" rec. 1000m in 3'20" (29 km)
- 5 x 5000 in 14'40" rec. 1000m in 3'20" (29 km)
- 4 x 6000 in 17'40" rec. 1000m in 3'20" (27 km)
- 4 x 7000 in 21' rec. 1000m in 3'15" (23 km)
- 5 x 2000 in 5'40" inside a long run of 35 km at pace of 3'15"
- 25 km long continuous run at 102% of MP
- 30 km long continuous run at MP
- 35 km long continuous run at 97% of MP
- 40 km long continuous run at 92% of MP

How is possible to understand, the global volume of SPECIFIC TRAINING for session is HIGHER than the distance of the event in 800m, 1500m, 5000m, is about the same distance in 10,000m, and is generally shorter than the distance in HM and MARATHON.

So, if we have 4 different phylosophies of training for different periods (using a MACROCYCLE of 6 months, for example, that can divide Indoor and Outdoor season, or, in case of Marathon, Spring and Autumn Marathon), we have MESOCYCLES having different percentages of volume and intensity.

a) INTRODUCTIVE PERIOD : Is about 3 weeks long, at the beginning of the preparation. In this period, the goal is to build up the general fitness at high level, using seeral means of training : Long Run for increasing the Aerobic Resistance, Gym for strengthening, Short Sprint uphill for increasing the ability in recruitment, Technique for increasing the running ability. With different percentage, this is the goal for every athlete, from 800m to Marathon.

b) FUNDAMENTAL PERIOD : Can last about 2 months, and is the most important part of the preparation. During this period, we reach the MAX volume of km, with growing intensity.

When we look at short events (800-1500), this period is used for a strong increase of AEROBIC POWER, and of STRENGTH ENDURANCE. There is not yet high speed, but the extension is important. So, it's better to maintain the same speed trying to extend the distance (for example, starting with 62" for 400m we move to 1'33" for 600 and 2'04" for 800 and 2'35" for 1000m)or the number of repetitions (from 8 x 400 in 62" rec. 2' to 12 x 400 in 62" rec. 2') or to reduce the recovery (from 8 x 400 in 62" rec. 2' to 8 x 400 in 62" rec. 1'). WE ARE NOT INTERESTED IN RUNNING FASTER

When we look at middle events (5000-10000m), this period is used for a QUALIFICATION of the long run, moving from AEROBIC ENDURANCE to AEROBIC POWER. So, during the first part of the period WE INCREASE THE DISTANCE AND THE GLOBAL VOLUME, during the second part WE MAINTAIN THE DISTANCE AND THE VOLUME AND INCREASE THE SPEED.

When we look at HM and MARATHON, we have the same goal of 5000/10000m. During this period, these specialists can train together.

So, THE PERIOD IS FOR BUILDING VOLUME AT LOWER INTENSITY FOR TRACK RUNNERS, AND HIGHER INTENSITY WITH NOT VERY HIGH VOLUME (compared with the distance of the race)FOR THE HM AND MARATHON RUNNERS

SPECIAL PERIOD : it lasts about 2 months, gradually moving from the FUNDAMENTAL. These periods or MESOCYCLES are not clearly defined : training can evolve in direction of the speed of the different events, trying to maintain the volume.

In this period, we have again 2 kinds of support for the SPECIFIC period :

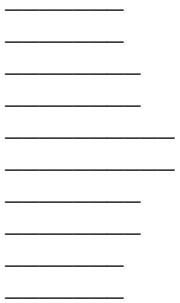
a) Biomechanical : training of strength becomes more specific, increasing the intensity and reducing volume in the case of short distances, extending duration at the same intensity of before in case of HM and Marathon.

b) Metabolic : the speed of training approach the Specific speed in the short distances, reaching level of 95% (in case of ENDURANCE), or faster than 105% (Full Speed Training). The training of Over Speed can be considered part of Special Period, being the support for going in the SPECIFIC SPEED ENDURANCE TRAINING.

The difference between the short distances and the long distances is that, looking at the short, we work with very high speed in short distance with long recovery, or with intervals with a global volume of 4km - 6km, at 92-95% of the Speed of the Race, with short intervals.

Looking at the long distances, we work with speed of 102-105% with a volume of 10-12 km (10000m), 12-15 km (HM), and 20-30 km (Marathon). We speak,in this case, about intervals. Different is the situation for Long Continuous Run.

We must build a funnel, where the intensity must be extended, and the extension must become faster.



At the end of the funnel, we have the SPECIFIC PERIOD, for reaching the SPECIFIC SHAPE.

I want to precise that Lel and Cheruiyot are not my runners, but are, like Kibet and Kwambai, with Claudio Berardelli. When we speak of Claudio, we speak also of dr. Gabriele Rosa, that is the "mentor"of Claudio, giving him the first phylosophy about a correct methodology of training. Rosa was the first giving to Kenyans runners the correct idea about marathon training.

Now, we try to understand WHY for some athlete volume is a must, for some other not.

But, before going to analyse different situations,and to answer to many questions, let me finish to explain what we do during the SPECIFIC PERIOD.

In this pereiod, we INCREASE THE SPECIFIC VOLUME, in 2 directions :

a) WE RUN MORE REPETITIONS AT THE SPEED OF THE RACE (if we use the same distance)

b) WE EXTEND THE LENGTH OF THE REPETITIONS AT THE SAME SPEED.

This is what we do for EVERY event of endurance.

For example, if for an 800m runner (1'44") we were able to do 5 x 600m in 50" rec. 5', we try to add another 400 (6 x 400), or we try to EXTEND the distance, running (always with the same recovery of 5') 4 x 500 in 63".

For a Marathon runner, THE LONG FAST RUN (the final 2 times before the race) BECOME LONGER (34 - 38 km), THE SPECIFIC MARATHON SPEED ENDURANCE also becomes longer (for ex., 4 x 5000m with 1 km at 3'30" recovery become 5 x 5000, replacing one long run, because are 29 km), AND THE MODULATION GROWS.

You must remember that we NEED QUALITY, and it's possible to develop it ONLY IF THE ATHLETE IS NOT TOO TIRED.

So, while during Fundamental Period we continue to have high mileage for every day (so never the athlete run very fast, but never runs very slow), and during the Special Period we have already the right speed for th race but not yet with high volume, during the SPECIFIC PERIOD we have to do very easy training the 2 days before the SPECIFIC TRAINING, and we must recovery very well for the next 2 days.

I personally use, once every 3-4 weeks, a SPECIAL BLOCK (during the SPECIAL PERIOD) or a SPECIFIC BLOCK (during the specific period). Later I explain what they are.

So, THE PHYLOSOPHY FOR EVERY EVENT IS TO ENHANCE THE VOLUME OF SPECIFIC TRAINING, and the other type of training (Special and Fundamental) have the task to allow the athlete to do it.

The final question is :

HOW MUCH SUPPORT, and WHICH KIND OF SUPPORT, we need in order to reach that goal ?

When we speak about MILEAGE, we speak about something generic, that has very little influence in the real training. Mileage, without speaking about SPEED OF THE MILEAGE, is something useless.

Really, somebody can suppose that, for an athlete able running 42 km under 3' / km, RUNNING AT A SPEED OF 6:00 per Mile can be a useful training ?

Easy means at the pace of Regeneration. When we speak about regeneration, we must also remember that running too slow means to remain more long time in contact with the ground,

losing muscolar tension and increasing the eccentric contraction when you have to absorbe the impact with the ground. That's the reason because, normally, top athletes prefer regenerate running at 3'50" / 4' per km that at 5' : under the point of view of ORGANIC FATIGUE, there is no difference, but about the biomechanical of the action, the athletes feel more comfortable running a little bit faster.

RE: Duncan Kibet and James Kwambai : the role of Claudio Berardelli, and analysis of something new in training *4/10/2009 12:30AM* - in reply to	Reply | Return to Index | Report Post

Yes, it's true that long runs and high mileage encourage the production of mitochondria and promote the growth of capillaries. The question is WHEN WILL THIS TRAINING WORK. If you want to build a house of 10 floors, when you arrive at the top you cannot continue to build. If you want to be more comfortable, YOU CAN ARRANGE SOMETHING INSIDE THE HOUSE, but you cannot touch the structure, that at the moment is finished.
In the history of mythologies, there were many Coaches and Scientists that used very long runs for the CAPILLARIZATION. The first was Van Aaken, great coaches as Frassinelli from France used to start every season with 3 hours of long run at 5.0 per km (Jazy, WR holder of 2000m). But look at the value of the performances.
Already in 1964, somebody (Snell) was able running 800 in 1.44. In 1979 Seb Coe ran 1.42.33. Now, nobody is able to run so fast. The Kenyan record of 800 is 1.42.24 from Sammy Koskei in 1984.
In 1500m, 30/25 years ago we had a lot of European (not TOP champions) able running under 3.32 (Wessinghage, Hudak, Deleze, Abascal, Gonzalez) and somebody under 3.30 (Auita, Cram, Coe himself, Maree). Athletes from GBR able running 3.33 (Robson, Moorcroft, Rowland) had to find fortune in other events.
In 2008 for the first time in 30 years NOBODY RAN UNDER 3.31.
Instead, in 5000&10000m we continue to improve the best average, and in HM and Marathon everything changed.
Why this, if not connected with the use of LONG FAST RUN, able to give stimula to the body.
Dont forget that TRAINING IS THE ANSWER TO THE PROPOSAL, NOT THE PROPOSAL.
Without stimula in some direction, there is no answer, and the performances go down.
The repetition, year after year, of the same training (running 2hr30 instead 2hr15 at the same slow pace is not a different stimula)brings the athlete to a situation of non progress at the beginning, and of decrease of his qualities in the second time.

During the SPECIFIC PERIOD, top athletes must be able to reach their peak of SPECIFIC QUALITY. This means, for example, the best speed and explosivity for a sprinter, the best reactivity for a jumper, and the BEST SPECIFIC SPEED ENDURANCE for a runner (from 200m till Marathon).
We must identify the most important qualities you need to develop in order to improve in your event.
How already I explained, in middle and long distances the final goal is TO EXTEND THE DURATION OF THE SPECIFIC INTENSITY, that means to improve both in the longest distance, and in the main event, because YOU CAN INCREASE YOUR INTENSITY FOR THE DURATION YOU NEED, maintaining the same INTERNAL LOAD.
In order to reach these results, WE ALWAYS MUST BE ABLE TO TRAIN AT TOP INTENSITY FOR LONG TIME. Our problem is HOW TO PREPARE this type of very intensive training, and HOW TO RECOVER after it.

I explained that TRAINING IS NOT THE PROPOSAL, BUT THE ANSWER of the body.

Training is an enemy, that the body must learn to recognize. Training is like a vaccin : you inject in the body a small quantity of the virus, so the body can recognize the enemy, for fighting and destroying it when tries to win with your body.

If you inject too much virus, this goes to win against the body, and you become sick.

Same thing about training. If you don't push near the border, there is NO STIMULUS, and the physiological level remains the same, sometimes goes down.
If you push too much, training wins, and you become OVERTRAINED : the body is too tired, and needs long time for reovering.

So, in the modern methodology, we MUST GIVE VERY HIGH STIMULA during the specific period, and we need, for this type of training, TO BE FRESH IN MUSCLES AND MIND.

At the same time, BECAUSE THE EFFECT IS TO GROW USING THE ABILITY OF OUR BODY IN SUPERCOMPENSATING, we need to recover very well.

After very hard works, we need to rest a lot, going for very easy regeneration. REGENERATION is not only under physiological pointe of view, but also under MENTAL point of view. Tough workouts have a very high NERVOUS COST, but if the athletes don't do it, never can reach the top shape.

Top athletes, and top coaches, MUST HAVE THE MENTALITY OF AN EXPLORER : they have to go in a DARK AREA, still unknown, in order to give new stimula for overtaking their current limits.

With a conservative training there is no stimula, and at the end there is no training.

That's the reason because, when a program is good, the first thing to do is to change it, in order to avoid every kind of ADAPTATION, that is the main enemy of STIMULA in training.

Because sprint is sprint only when we use max. intensity, NEVER we have to put sprint (with the goal of recruiting fibres) when already we have a specific workout (if specific, is a workout of high intensity). In the case you show, the best collocation is in the middle (the day after what you indicated with the arrow).
In any case, we can use shorter sprints (no longer than 60m) uphill, in little quantity (for example, 6 times only) every time the legs are heavy and the athlete is not able to maintain a good frequency. In this case, we need to stimulate the nervous system, and short sprints are an easy way for reaching this goal.

I finally am able to use in Eldoret Internet, and today (that is a day not too busy for me) I can read some interesting discussion. I had no time to read everything (last time I was at page 11...), but anyway I want to try to better explain my phylosophy, hoping that my English can be clear, also if not too much correct.

1) There is no training for one event, but for one athlete. Every event is a compromise between two typologies of athletes : FAST and RESISTANCE. If we look at 800m, for example, COE, OVETT, SNELL were RESISTANT, JUANTORENA, SUSANJ, FIASCONARO, KONCHELLAH were FAST. This means that their training must be completely different. For example, if Konchellah was able, at the beginning of his career as 400m runner, to run in 45.1 using in training 3 times 300m in 34.0 with 10:00 of rest, his development to ENDURANCE was to run 6 x 300 in 36.0 with 5:00 rest. On the contrary, CRAM was able to run 10 x 300m in 39.0 / 40.0 with 30.0 (30 seconds) of interval. The first is a training for an animal full of Fast fibers, the second for an animal very strong under the aerobic point of view. But 39.0 is already the pace for 1:44, so, with only 800m to run an without intervals, CRAM could run faster than Konchellah (1:42.88 against 1:43.07).

2) A good coach is like a good taylor : he must be able to make the clothe ON THE MEASURE AND ON THE SHAPE OF THE CLIENT. So, before making the cloth, ha has to check all the particulars of the client. Instead, when we speak about SCHEDULE FOR EVENTS, we want that

everybody goes to adapt himself to some GENERAL TRAINING. In this case, his training remains GENERAL, never becoming SPECIFIC.

3) Regarding VO2 Max, my opinion is that is not possible to enhance it too much with proper training, because is more connected with genetic qualities. On the contrary, it's possible to enhance very much the LT, that becomes DIRECT SUPPORT for the distances between 3000 and HM. So, personally I'm not interested in VO2 max, because I don't think is important. I'm interested in HOW TO INCREASE THE LT, and expecially HOW TO INCREASE THE MAX LASS (maximum lactate steady state), that is the ability to last for long time at high level of lactate without too much increment. For the best specialists of 10000m, for example, is possible to remain for about 20:00 at a level from 12 and 14 mmol, that is like a Steady State at top level. I don't know exactly WHY it is possible to do this (I suppose that is possible to improve the permeability of the membrane, and to modify the level of acidity in the blood, and to increase the ability in tolerance of lactate in the fibres), but I know HOW to do this. This is the theme of a my seminar to European Coaches last year, and now is published in the EAA section for articles and researches.

4) There is a interconnection between INTENSITY and EXTENSION. I give a simple example. My athlete is able running 10 x 400m in 60.0, with 60.0 recovery, reaching after running the no. 10 a level of 16 mmol. I go for one month in training AROUND this type of speed (for me, between 95 and 105%), using some longer distance (for example, till 600 in 1:32) and some shorter distance (for example, 300 in 42), and, at the same time, I work for the LT with training of Aerobic Power (20-30 min very fast, or long intervals), with the support of LONG RUN AT 70% of the speed of the race, in case of distances like 5000m (if you run 13:20, that is 2:40 per km, the speed is 16.0 every 100m, so 16x3=48.0, and 2:40 + 48.0 = 3:28 pace). After one month, my athlete is able running 15 times in 60.0 with 1 min recovery, reaching the same level of lactate (16 mmol). If we go to check the lactate AFTER 10, he reduced his level to 13 mmol. So, IF I ASK HIM TO RUN 10 x 400m WITH THE FINAL LEVEL OF LACTATE AT 16 (as one month before), HE CAN RUN IN 58 INSTEAD 60. So, working AROUND the specific speed, we improve ENDURANCE, but also SPEED ENDURANCE, because the athlete is able to run faster with the SAME INTERNAL LOAD.

Under this point of view, SPEED is the support for ENDURANCE, and ENDURANCE is a support for SPEED ENDURANCE, that is the SPECIFIC TRAINING.

We must always look for our 2 engines :
Mechanical (exercises for incresing strength and running economy)
Methabolic (that is the real source of every endurance)

Regarding the discussion about BLOOD SELF TRANSFUSION, I really don't believe in it. We had in Italy athletes running WITH (before 85) and WITHOUT (after), and they were able to improve. ANTIBO went in the program of blood self transfusion in 1982 till 1984, running 27:40. After, he didn't use anymore this system, and in 1989 ran 27:16 and, in 1990, was practically unbeatable, WITHOUT.
I had in my group athletes running in 2 month 26:30 from 28:19, or beating the WR in 7:53 (steeple), or winning medals in WCh (Moses Mosop, Shami, Dorcus Inzikuru) in several distances from 3000 to Marathon, not using anything (also integrators, only KENYAN FOOD) : why must I think that with some blood doping they can run faster ? So, my conclusion is that FOR WEAKER ATHLETES BLOOD DOPING CAN HAVE EFFECT ON THEIR PERFORMANCE, but for TOP TALENTED ATHLETES NO EFFECT.
I want to give an example : 99% of normal people can increase their strength using electrostimulation. But can somebody think that Hoffa or Cantwell or Alekna can increase their strength with this system ? Also for the AEROBIC POWER we have talented athletes, able to increase of 20-25% the global volume of blood in their body, during a very good training, AEROBIC, lasting 3-4 months. For these athletes, blood doping doesn't work. And we have LESS TALENTED ATHLETES, not able to change their physiology so much, that have advantages using blood doping. BUT, NORMALLY, ARE NOT THE BEST.

When you are able to run very fast in competitions like 200 and 400m when young, YOU HAVE THE PHYSIOLOGY OF A SPRINTER. Konchellah (45.1 at 18), Fiasconaro (45.49 at 22),

Juantorena (44.26 at 25), Courtney, Crothers, or in the past Whitfield and Harbig, WERE ATHLETES WITH A HIGHER PERCENTAGE OF FAST FIBRES. So, their mytochondrial attitude was not very high. In these cases, the phylosophy is the same (to extend your speed, moving to higher specific volume and reduction of recovery), but the speed is still very much higher than the speed of the race, the number of repetitions is not very high and recovery times are, in any case, open. If, for example, you are able to run 3 x 300 in 34.0 with 8 min recovery, you move to 6 x 300 in 36.0 with 6 min as final goal. If you become able to run in 1'42" (speed of 12"75 every 100m), the speed of 300m (12.0) is 5,88% faster than the speed of the race (0"75 : 12"75). Instead, in case of AEROBIC ATHLETES, with a very strong enzymatic system, we use the same speed, or also something slower. The 10 x 300 in 39.0 of Cram with 30.0 of interval are a clear example of this, and already 39.0 is the speed for 1'44".
Personally, I was curious to try a different type of training with some African runner, if I had time. For example, alternating 3 weeks at sea level with very tough training in lactic direction, followed by 3 weeks in altitude with training for Aerobic Power and Lactic Power (high speed with very open recovery), for competing at sea level again IMMEDIATELY AFTER THAT PERIOD, COMING BACK AT SEA LEVEL. I used this type of methodology, when I was the national Italian responsible, few times, having good results (for example, a PB with a very young Giuseppe D'Urso in 1989, from 1'47"17 to 1'46"30 going directly from Sestriere to Cesenatico, on the sea), but never like real project, with top athletes.
If the most important quality for 800m runners could be the speed, why the 90% of the athletes in top 50 all-time have also good times in 1500m, and only 10% in 400 ? And, if we look for Juantorena, Fiasconaro, Everett, Ereng, Konchellah and others, running 400/800, why they are not in top position in 800, but we find specialists of 800/1500 like Coe, Cruz, Cram or pure specialists of 800 (Kipketer, in any case more talented for 1500 than for 400, Sammy Kosgei, Bungei, Mulaudzi, Borzakovskiy, etc... ?).
The perfect specialist is an athlete having the MORPHOLOGY of a top 400m runner (like Juantorena) and his biomechanical attitudes, and the ORGANIC ABILITY of a top specialist of 1500m (El Guerrouj). When we find an athlete like this, to look for 1'39" becomes possible.

I read, when I can (in Kenya we had a week of blackout...), with very much interest all the messages on this argument.
If I well remember, somebody asked to define the difference between GENERAL, SPECIAL and SPECIFIC.

a) GENERAL is all that training that has the goal to increase our qualities, like base for improving the performance.
I want to explain this with an example.
The TALENT of an athlete is like MONEY for somebody wanting to build his house. If you are Gebre, your house can be a skyscraper of 60 floors. If you are a normal athlete, may be a house of 10 floors. But, in any case, BEFORE BUILDING THE HOUSE, YOU HAVE TO BUY THE MATERIAL YOU WANT TO USE.
This is the General period. You must look for increasing your general resistance (basic for every sport), your strength, your cohordination, your rapidity (don't make confusion between RAPIDITY, that is a NERVOUS QUALITY, and SPEED : Speed is a combination of STRENGTH and RAPIDITY).
We work for several months (depending on the event) for increasing these qualities.

b) SPECIAL is that training that is connected with the Specifity of the event, but not still very specific. For example, if we use plyometric exercises for a jumper, THIS IS A SPECIAL EXERCISES : SPECIFIC is when we really jump, giving particular attention to the TECHNIQUE of the event.
In the case of a runner, when we go for speed that are faster than 10% of the speed of the race, or slower than 10%/15% (depending on the event), we can speak about SPECIAL SPEED TRAINING. When we work for increasing STRENGTH, we work in GENERAL WAY, but when we work for incresing STRENGTH ENDURANCE, extending the duration of the exercises, we work in SPECIAL WAY.

c) SPECIFIC is that training DIRECTLY connected with the event. Running 3 x 600m in 1'18"

with 10' recovery for a runner of 1'44" is SPECIFIC, running 8 x 600m in 1'24" with 5' is SPECIAL, running 12 x 600m in 1'30" with 2' is GENERAL.

So, during the SPECIAL period we have already some SPECIFIC workout, and during the SPECIFIC period we continue with some SPECIAL workout. The limit between SPECIAL and SPECIFIC is very little, we move from one period to the other only modifying the percentage of one type of training compared with the other.

Also during the SPECIFIC period, we need to have, every 3 weeks about, a SPECIAL period lasting the same time, for refreshing the SPECIFIC qualities that we use for the performance, in SPECIAL way. This means to reduce a little the intensity (but not so much), to go for some SPECIAL exercise again (for example, we don't use plyometric exercises during the main 3 weeks of competitions, but, during the next period of 3 weeks WITHOUT competitions, we use them again), and to increase the volume again. Only using in correct way a modulation between intensity and quantity, and between Special and Specific training, during the competitive season, we can maintain for long time a top pick of shape.

Other thing : I see a lot of messages about the influence of Lydiard. I was, of sure, very much influenced by Lydiard, also because I started to coach very young, in 1965, and Lydiard was a winning model with his theories. But, frankly, this querelle seems to me ridicolous.
If we want that every kind of research, and every invention, can be useful for the future, we ALWAYS have to give a big merit to the beginner of the development, but we cannot stop at his beginning point. So, one thing are the principles and the phylosophy, that are still a basic "law" for all the best coaches for middle and long distances in the World, another thing their application, because science, methodology, experiences and research were able to go ahead during the last 40 years.
If somebody knows the history of methodology, knows that we had in the past several coaches that influenced full generations of athletes. Mihail Igloi, for example, the Hungarian that coached Iharos (WRH from 1500 to 10000 in the years 1955-56), Szabo, Rozsavolgyi. Or Van Aaken, the first studying the effects of long, long run on capyllarization. Or the French Frassinelli, coach of Michel Jazy (running 3 hours at very slow pace, also after beating the record of 2000 and 5000m with 13'24").
You have particular attention for Lydiard, because he was a coach of English language, and wrote books in this language. But you don't know the ideas and the phylosophy of coaches from eastern Countries, for example, that influenced the guru of Ethiopia, Woldemastre Kostre, going in Hungarian University for his scientific preparation.

I don't understand, and don't know, and I'm not interested in knowing, anything about electricity, but I'm very happy that somebody discovered and invented and developed it, so, when I go in a dark room, I have to press the bottom only for lightning it. This means that I don't waste time in trying to understand what is COMMON USE, but I start from there for going ahead with my job.

You are in the Country of the Phylosopher of Pragmatism, James. Try to be more pragmatic : the final goal is not to discuss who was, or is, better between the great coaches of the history, but to know the way for making the athletes faster. For doing this, you have to use ALL YOUR KNOWLEDGE, not limiting yourself to one source only.

I want to explain my training phylosophy, and the idea at the base of it, without speaking too much about physiological principles.

1.
In my opinion, TALENT is the speed, related with a specific distance. In other words, the winner is, for every distance, THE FASTER AMONG ATHLETES WITH THE SAME ENDURANCE. This is very different from THE MORE RESISTANT AMONG WHO HAVE THE SAME SPEED, because when I look for building a champion, I start to investigate the endurance of an athlete, not his speed. So, for example, I can define groups of athletes having NATURALLY good SPECIFIC QUALITY OF ENDURANCE for different distances, and after I try to develop their

SPECIFIC SPEED.

2.
For doing this, when I look for young athletes, I put them in competitions in 3 different distances, creating groups related with their most evident qualities :
a) 400 / 800 / 1500
b) 800 / 1500 / 5000
c) 3000 / 5000 / 10000
d) 5000 / 10000 / HM

3.
From the first group I can find specialists of 800, deciding that can be FAST TYPE or RESISTANT TYPE. In the first case, they can stay for 3-4 years in 400 / 800, in the second in 800 / 1500. Only after 3-4 years, we can move the athlete of the second group to 1500 / 3000 and/or steeple, while the first group NEVER (normally) can move to 1500.

From the second group, I look for specialists of steeple and 5000. Also in this case, they can move to 10000 after 2-3 years, somebody arriving after 6-7 years to Marathon too.

From the third group, I look for specialists of 5000 and 10000. In this case, already after 1 year they can run HM, but can move to the full distance in the period of 4 years.

From the fourth group, we take new Marathon runners, preparing them to the full distance in less than 2 years.

4.
In every group, I go, at the beginning, to develope their SPEED ENDURANCE, working on the 2 shortest distances. If, for example, I have 3 athletes running 3'39" in 1500m, but with different basic speed (a : 50" - 1'50" - 3'39") (b : 49" - 1'48" - 3'39") (c : 48" - 1'46"5 - 3'39"), I plan immediately a future of 10000m for a), 5000 for b) and 1500 for c), using a strategy of 4 years for the final event.
In the case of a), the different speed for 400 / 800 / 1500 are 12.5 / 13.75 / 14.60. This means that the athlete run 800 at 90% of his speed of 400, and 1500 at 93.5% of his speed of 800. I can suppose that he can run 3000m at 95% of his speed of 1500m (15"33 every 100m = 2'33"3 every 1000m = 7'40" in 3000) in one year, and 5000 at 98% of his speed of 3000 (15"64 every 100m = 2'36"4 / km = 13'02").
Practically speaking, I identify, from the beginning, the above speeds as the key for developing his SPEED ENDURANCE for building his best possible performance :

a) SPEED of 12.5 for distances between 100 and 300m
b) SPEED of 13.7 for distances between 400 and 600m
c) SPEED of 14.6 for distances between 800 and 1200m
d) SPEED of 15.3 for distances between 800 and 2000m
e) SPEED of 15.6 for distances between 1000 and 3000m

The goal of training is very simple : TO EXTEND THE ABILITY OF DURATION AT EVERY SPECIFIC SPEED.

Of course, for doing this, we use a combined system :

1) Increase of global volume at the same speed
2) Extension of the length of the distances that we use, at the same speed
3) Reduction of recovery times for same speed and distance

The combined action of this phylosophy with the different speed of Specific Training can change the physiology of the athlete, that becomes able to run with a higher level of lactate in his fibres, to remove lactate faster from his fibers, and to enhance the ability in storage of lactic acid in his muscles. THIS IS SPECIFIC ENDURANCE FOR EVERY EVENT.

5.

As we have to "motors", one MECHANICAL (our muscles, like tha body of a car) and another METHABOLIC (the engine of the car), we have to take care of both of them. But in short distances we can perform looking at 90% for the MECHANICAL motor, in Marathon at 90% for the METHABOLIC engine. This doesn't mean that we don't have to take care of both the situations, but we cannot use the 80% of our time for training the less important quality for the chosen event. Of course, it's very good to eat a cake with a cherry, when you are hungry : but if you eat the cake without cherry you can, in any case, to satisfy your necessity of food, instead if you eat the cherry without cake you are hungry like before.
In other words, the focus in training is to work for exalting the main qualities of an athlete, using few time for trying to reduce the "holes", and not the contrary.

6.
In any event of athletics, speaking about running, we can obtain results for two reasons :
a) Natural Talent, that, with different expressions, can be identified in SPECIFIC SPEED
b) Training, that is the ability to extend the duration of your natural talent.

An example, speaking about the shortest distance of Track and Field (100m) :
Ben Johnson (for this example is not important if he used drugs or not) at 18 years ran 10.80, at 28 in 9.79.
This means that, if the 2 Ben Johnson could run together, the 28 old arrives to the finish 11m ahead.
But, if we go to see their time at 50m, we can see 5"70 when he was 18, 5"48 when was 28.
The difference, in meters, is about 2.5m, that in 50m is 5%.
So, looking at the full distance, we can see that :
18y : 5"70 + 5"10
28y : 5"48 + 4"31

This means that Ben Johnson, in 10 years of training, was able to earn 2.50m during the first 50m (improvement 5%), and 8.50m during the second 50m (improvement 17%).

So, 5% is the increase of SPEED, 17% the increase of SPEED ENDURANCE.

This is an extreme example, and who is sick of Mathematics can find, of sure, some mistake in my numbers. But it's enough for showing that, IN ALL RUNNING EVENTS, you cannot improve very much your SPEED, that is highly connected with your Natural Talent, but you must work for improving in SPEED ENDURANCE, that is more connected with training.

7.
At the end, I want to remember that EVERY TEST CAN GIVE A STATIC PICTURE OF THE ATHLETE IN THE MOMENT OF THE TEST, but is useless if we don't use it in a DYNAMIC strategy having the final goal to change the qualities of the athlete. So, I WANT TO BUILD THE SPECIFIC ABILITY IN ENDURANCE OF ONE ATHLETE, not depending on what he is able to do at the moment. And, when I extend the ability in duration for the same speed, I provoke some physiological change that makes the athletes different from before.
So, I cannot depend on the current attitudes of one athlete, but I go to explore new attitudes. Top athletes, as top coaches, are EXPLORERS in a land that don't know. If you fear to try something new, NEVER you can give to your body and your mind the stimula for improving.

So, when I read a lot of discussion about VO2 max, Thresholds, Lactate, I understand that the main problem in the evolution of white athletes is THAT ATHLETICS, IN OUR COUNTRIES, BECAME LIKE MATHEMATICS : a lot of scientists, but no more instinct and no more heart. Athletes that want to control everything CANNOT OVERTAKE THEIR CURRENT LIMITS, and you can have stgimula in two directions only : OR YOU RUN FASTER, OR YOU RUN LONGER. The best thing is to do both the things.

If in the race you want to run fast, in training you have to run fast (of course having care of your recovery).

If in the race you have to run long distance, in training you have to run long distance.

But, if you want to be competitive, YOU HAVE TO RUN LONG AND FAST at the same time, not only long-slow, and short-fast. @ @

Sprinting
I want to thank you for correcting my mistakes. I well knew that Italian word FORZA is strength, but after writing once in wrong way, I continued without thinking. Sorry, don't hesitate to correct my English when I write something wrong, is a good way for learning something better. Thank you again, next time you can also write your name, because you have reason.
Regarding the question about the TECHNICAL WAY for running hills, I can say, from my experience, that :

a) If you have an athlete running with very short strides, using high frequency, he needs to increase his strength and must use sprints climbing more for muscles than for nervous system. In this case, he has to push using long strides, also if the speed is a little bit slower than running with more frequency.

b) If instead you have an athlete using long strides (and of course slow motions), is better that sprinting he uses the idea of "skipping", running with very high knees and trying to increase his frequency. For him, RAPIDITY is more important than strength.

At least, short hills have the goal of improving the DEFICIENCIES rather than improving the qualities that you already have. Using hills, and mixing length, gradient and technique of running, you can leave a mark on different qualities, from nervous reactivity to the capacity in recruiting fibres, training all what you need for having and using more strength.

This happens because the phylosophy of training is not TO REPLACE A TYPE OF TRAINING WITH ANOTHER during different periods of the season (for example, long run during winter season with crosses of 12 km, and speed during summer season without running over 6-7 miles in training), but is TO ADD SOMETHING THAT PREVIOUSLY YOU DIDN'T DO.
If you follow this phylosophy, it's clear that endurance is a basic work for speed, and speed a basic work for endurance. So, these two works must go on at the same time, of course with a correct modulation.
In training, there is a SPECIFIC TRAINING, directly connected with the performance, and a TRAINING FOR SPECIFIC TRAINING, that has the task to improve your basic qualities in order to do MORE and BETTER SPECIFIC TRAINING.
If, for instance, you connect 3 x 600m in 1'20" with 10' recovery with a performance like 1'45" in 800m, is clear that if you are able running 3 x 600 in 1'18"5 with the same recovery, or 3 x 600m in 1'20" with 6' recovery, you can run in 1'43". The problem is : how is it possible running in 1'18"5 instead 1'20", or with a shorter recovery ?
Is possible if we can play with SPEED, RECOVERY, VOLUME.
For ex., running 5x600 in 1'23" with 8' recovery, then 7x600 in 1'25" with 6' rec., till 10 x 600 in 1'28" with 2' rec.
But we can run more volume if we are able running 2 x 1000 in 2'25" with 10', then 4x1000 in 2'30" with 6', then 8x1000 in 2'36" with 3'.
But, for doing this work, we must use 2 x 2000 in 5'15" with 8', then 3x2000 in 5'20" with 6', then 4x2000 in 5'30" with 3'.
For doing this, we must run 5k in 13'45" or less, and for running so fast 5k, we must run 10k in 30' improving till 29'.
At the same time, we can go for improving speed, running 3x400 in 50" with 8', then 2 x 400 in 49" with 8', then 3x300 in 35" with 6', for example.
When we are able to improve in ENDURANCE, of course is easier to run one more interval at the same speed of before, WITH THE SAME RECOVERY. But, if you are able running 4x600 at the same speed that before you used for running 3x600, of course you are able running 3x600 a little bit faster. SO, ENDURANCE IS GOOD FOR INCREASING SPEED.
When we are able to improve in SPEED, of course is easier
to run a little bit faster the same number of intervals with the same recovery. SO, IF YOU USE THE SAME SPEED, YOUR EFFORT IS MINOR, AND YOU CAN RUN ONE MORE TEST.
SO, SPEED IS GOOD FOR INCREASING ENDURANCE.
The connection of these two type of works is the only secret of training.

TRAINING
What is important to understand is that there are TWO DIFFERENT TYPES OF TRAINING :

1) SPECIFIC TRAINING for your SPECIFIC SHAPE for the important races
2) TRAINING for SPECIFIC TRAINING

For example, if you are able running 4 times 400m in 53" recovering 4 min, and with this SPECIFIC WORK you can run 1'46" on 800m, if you want running in 1'45" is clear that you have two different possibilities (about tthe evolution of this workout) :
a) 4 x 400 in 53" using 3 min recovery instead 4'
(improvement in specific endurance reducing recovery time)
b) 4 x 400 in 52"5 always with 4 min recovery
(improvement in specific speed endurance running faster)
c) 5 x 400 in 53" using 4 min recovery
(improvement in endurance running a bigger volume)

The goal in training is clear. The question is : HOW IS IT POSSIBLE TO DO IT ?

Lovers of intensity say : run 4 x 400 trying running faster, going directly to solution b) spending some time

Who believs in aerobic base, says : before try to develop your AEROBIC POWER, for having a higher base for working in anaerobic way.

For example, we can extend the SPECIFIC BASE running a crescent number of 400m in slower time : 10 x 400 in 60" recovery 1 min, that develops in 8 x 400 in 57" rec. 1'30", that can develop in 6 x 400 in 54"5 rec. 2', that can develop in 5 x 400 in 53" rec. 4', that can develop in 5 x 400 in 52" - 52"5 rec. 4', that at the end can develop in 4 x 400 in 51"5 - 52" rec. 3'.

For running 10 x 400 in 60", you NEED MORE AEROBIC BASE.

For running 4 x 400 in 51"5, you NEED MORE SPEED.

So, you can combine at the same time workouts of Aerobic base (1 h progressive run, 40' fast, 20' very hard)

Still different the situation for a specialist of 800m. In this case, we must understand if the athlete is a sprinter (Konchellah, Juantorena, Mutua), a full 800m runner (Kipketer, Bungei, Sepeng) or a middle-distance runner (Coe, Cram, Yiampoy). In any case, the phylosophy of training is the same : to use short tests (300-600m) for a total amount of 3-4 km, at the pace of 90-95% of the pace of the race (for an athlete running 1:44, 13.0 pace every 100m, 90% is a pace of 14.3 (600m in 1:25.8) and 95% is a pace of 13.65 (300m in 41.0), increasing step by step number of repetitions, cutting recovery time. In these cases, long run has only the mean of regeneration, and is not important for the final goal.

Mr. Renato Canova: Could You Please Answer a Question About Effective Ways to Improve the Lactate Threshold?
I´m again in St.Moritz, reading Letsrun from the internet of Hotel Laudinella. I apologyze if sometime I am not to much precise, but I write at 2 by night, without reading again what I wrote. I went to read again what I wrote, and I found my mistake : I wrote faster, when I had to write slower. For example, in the case of Gebre (12:39),the time per km is 2:32 (15.2 every 100m), and 98% is 15.5 per 100m (2:35 per km is 7:45 for 3 km). But you must not think of the type of workout (that is clearly over the Threshold, and can reach 11 - 13 mmol for a top runner well trained), but of the EFFECT of this training. The question was : what type of training do you use for improving AnT ? The answer is : a lot of run that we can check between 95 and 105 % of the speed of the race.
I want to describe, for example, one type of training that Gianni Ghidini (the current coach of Bungei, Yiampoy and Kamal) and me use with these guys during the last period, having the goal to IMPROVE SPECIFIC ENDURANCE, developing intensity from the Threshold to Specific Endurance.

1) 6 x 600m (rec. 4 min) in 1:28 (60/28) 1:28 (60/28) 1:27 (60/27) 1:27 (60/27) 1:26 (60/26) 1:26 (60/26)

2) (about 10 days later) 5 x 600 (rec. 5 min) in 1:26 (60/26) 1:25 (59/26) 1:25 (59/26) 1:24 (59/25) 1:24 (59/25)

3) (about 10 days later) 4 x 600 (rec. 6 min) in 1:23 (57/26) 1:22 (57/25) 1:21 (57/24) 1:20 (56/24)

4) (about 10 days later, in the case of Bungei 8 days before Zurich) 3 x 600 (rec. 8 min) in 1:19.3 (54.2/25.1) 1:19.5 (54.6/24.9) 1:17.2 (53.0/24.2)

The next workout (before OG) will be 2 x 600 (rec. 10 min) in 1:16 (52/24).

This type of work starts about 2 months before the main event, having the goal of supporting AnT. After the first two sessions, when we test the speed at a level of lactate of 6 mmol, we can find an improvement of about 5-8 sec, per km. After the first two sessions, the focus of this training is the improvement of SPECIFIC ENDURANCE, joined with the capacity of increasing speed in the final of the race. The 5th workout is very specific,lactate reaches a level of 16-18 mmol, but in any case is an evolution of the first workout.

The normal use of groups of short distances increasing the speed every test, is a good way for increasing the AnT in aspecialist of 800 or 1500m. For example, 4 groups of 3 x 300m in 42/40/38 with 2 min recovery (and 5 min between the sets), or 4 groups of 3 x 600min 1:33/1:30/1:27 rec. 2 min and 5min, for specialists of 800 and 1500/3000m respectively, are workouts very good for increasing the AnT.

But what is important to remember, is that every distance needs a specific Aerobic Support, that is not the real AnT. For example, in the case of 3000 SC/5000, we can create a MAX LASS (Maximum Lactate Steady State) of 6/8 min at a level of 11-13 mmol of lactate, and the AnT that we need is the speed at a level of 8 mmol about. So, don`t pay attention at the CONVENTIONAL THRESHOLD of 4 mmol,because is something for physiologists, but really in many case doesn´t mean anything.

I try to write the level of lactate that you must use like AEROBIC SUPPORT for the specific workouts in different events :

800m 8-12 mmol
1500m 7-10
5000m 6-8

I fully agree with Antonio. In choosing a type of training, I try to analyze the characteristics of every athlete. I\'m not AGAINST plyos and weights, but I\'m not PRO these trainings. Simply, there\'s some athlete that can have advantage using it, and some other not.
Plyo is good for increasing elastic strength and muscle reactivity. So, if you have an athlete already talented under this point of view (for example, Cherono has wonderful feet), what is the reason for using this type of training ? I prefer to use short sprint for increasing explosive strength, and medium hills (till 800m) for increasing the strength endurance. I tried also, with Shaheen, to do short sprints (80m about) uphill with 2 hurdles 91cm high : this is a very difficult exercise, but I think that can produce very high specific strength endurance for steeple.
Another important thing, when you have to choose a type of training, is the relation between ADVANTAGES and RISKS. Personally, I don\'t agree that plyo and weight can give 1% of improvement, but of sure can give 30% of risk. A lot of athletes fall down in some injury due to plyo.
And you must always remember that we are speaking about EVENTS OF ENDURANCE, so the most important problem is ENZYMATIC. About a good balance between strength and endurance, for example, I propose you the following test (only for marathon runners) :

There is not a training for 800m. There is a training for some athlete preparing 800m with his specific attitudes.
The training of an athletes type 400-800 (from the past, Rudolf Harbig, Thomas Courtney, Susanj, Fiasconaro, Juantorena, now Rudisha) is very different from the training of athletes type 800-1500 (Peter Snell, Wohlhuter, Coe, Kipketer, Cruz).
So, to look at a "training for 800m" is wrong.
We have athletes,like Coe, WR holder of 800m, winner of 2 Olympic Golds in 1500m, and athletes, like Steve Ovett, WR holder of 1500m, winning Olympic Gold in 800m.
Basically, we can divide the specialist of 800m in two big families : who has LACTIC attitude and high speed, and who has AEROBIC attitude and high endurance.

When we want to increase the performances of an athlete of first type, we have to work for EXTENDING their ability in lasting. How I explained several times, the basic AEROBIC POWER every athlete needs is strictly personal, and connected with his typology.

If an athlete is able running 400m under 46" when still young, is because he is, basically, a "long sprinter" with high percentage of fast twich fibers. This is the case, for example, of Billy Konchellah, running officially 400m on a earth - track in 45.1 when very young (officially 18, really 20). He had the physiological attitude of a sprinter, with the morphology of an 800m runner (long legs, technically very relaxed, with very good elasticity in his action).

The road he had to follow for becoming two times World Champion of 800m was to increase his "specific speed endurance".

For doing this, of course he needed to better a little his Aerobic Power ; but running long run at slow pace doesn't give any advantage in this direction. I explained many times that there is no connection between speeds that are too far one from another.

So, if you are able running 400m at a pace of 11"25 per 100m (45"), and you look for a pace in 800m that is the 85% of your PB in 400m (15% of 11"25 is 1"69, so 85% of speed is 12"94 that means 1'43"52), you can have your training following this pattern :

a) MAX SPEED (and max recruitment of fast fibers) :

Sprints uphill (60-100m) with full recovery

b) SHORT TESTS OF SPEED ENDURANCE (development of the oxydative ability of fast fibers) :

Groups of 60-80m (for ex, 3x6x60 + 2x4x80), recovery about 1'30" between every test, 5'/6' between sets

c) SPECIFIC SPEED ENDURANCE (development of the Lactate Capacity) :

Tests between 200 - 500m mixing recovery times (in any case not short). Example : 200m at 105% of race pace (in the above case of 1'43"52, 12"94 every 100m - 5% (0"65)= 12"3) in 24"6 (rec. 2') + 300 at 103% (12"55) in 37"7 (rec. 3') + 400 at 102% (12"7) in 50"8 (rec. 4') + 500 at Race Pace in 64"7 (rec. 5') + 600 at 98% (13"2) in 1'19"2

d) SPECIAL LACTATE RESISTANCE (development of the ability in running with high accumulation of lactate) :

Test between 400 - 600m, always mixing recovery times.

Example : 2x600 at 95% (13"6) in 1'21"6 (rec. 5') + 3x500 at 96% (13"45) in 67"2 (rec. 5') + 3x400 at 97% (13"35) in 53"4 (rec. 5'), rec. between sets 7'.

e) SPECIAL AEROBIC POWER (development of the ability in removing quickly lactate from muscles, connected with the Anaerobic Lactate Threshold) :

Tests between 500-1200m, opening recovery times, because of the accumulatioin of lactate in the muscles.

Example : 1200 at 85% (14"8) in 2'58"6 (rec. 4') + 1000 at 87% (14"5) in 2'25" (rec. 6') + 800 at 90% (14"2) in 1'53"2 (rec. 7') + 600 at 93% (13"9) in 1'23"4 (rec. 8') + 400 at race pace (51"7)

f) SPECIAL AEROBIC POWER SUPPORT (development of the Threshold) :

Tests between 2000 and 5000m, or fast continuous run till 20'. In any case we must run SLOWER than 50% of the race speed (in the above case, 50% of 12"94 is 6"47. 12"94 + 6"47 is 19"4 = 3'14" / km).

g) GENERAL RESISTANCE and RIGENERATION :

Continuous run till one hour, at easy pace.

One of the goals of this type of training is to build the ability in working with higher concentration of quality. This target must be reached in 4-6 years of training.
So, at the beginning, we cant use training of high intensity too frequently.

A scheme for this training can be as follows :

MONDAY : g) + technique and gym
TUESDAY : a)
WEDN. : f) + gym
THUR. : b)
FRIDAY : g) + technique and gym
SAT. : d)
SUNDAY : Rest
MONDAY : g) + technique and gym
TUESDAY : c)
WEDN. : a) + g)
THUR. : e)
FRIDAY : g) + technique and gym
SAT. : d)

I think that the level of aerobic training must be connected with the specific training. The AEROBIC SUPPORT cannot be too much far from the specific speed that athletes have to use normally in their competition. So, we cannot speak about AEROBIC ENDURANCE only in one way.
In my opinion, EVERY SPEED SLOWER OF MORE THAN 80% OF THE SPEED OF THE RACE HAS NO MEAN OF TRAINING, BUT OF REGENERATION BETWEEN THE REAL WORKOUTS.

If you allow me to do some comment, I think that American coaches are too much scientific, and sometime lose the ability to watch inside the reality. Personally, I never met a scientist that was also good coach, because they want to use the athlete in function of training, not training in function of the athletes. Don't forget that the most important problem to solve is to make easy what is difficult, and for this goal we need to be very simple, natural in our approach, bringing our athletes to train more without too much pressure. That's the reason because too much hard training is a mistake : because athletics become a continuous examination, no more a pleasure. You can train hard preserving the ability of enjoying your training, instead too many times athletes think that training is a "must", and lose their nervous energies in fighting in training. Under this point of view, we have very much to learn from African runners. When we are able to learn from them, we can teach them something that they don't know. From this type of mixture we can build top results : scientific knowledge applied to natural attitude and capacity of preserving nervous energies.

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am in Iten, and here internet works very bad and is very slow. Now are 10.40 pm, and I read some post after 4 days. Regarding the length of the ramps, I want to remind that the effect is to recruit the highest possible number of fibers in muscles interested in the action. So, is not important to use longer distances, because the goal is not to make high quantity of lactate, but is a neuromuscolar effect. Ramps can have a very hard gradient (may be about 30%), and can last about 6-8 sec. The difference between ramps and hills is in the gradient, and of course in their duration. With ramps I want to develop explosive strength, basic strength for every type of exercise. I have not care about recovery time : when I feel ok, I go again. Instead, with sprints climbing, I use a gradient between 10 and 15%. I cannot speak of real run on the ramp, because the speed is very slow : ramps can replace weight training. Instead, sprints climbing are sprint at max intensity, and can go till 100m, depending on the gradient. They can last about 12-15 sec. In this case, the athlete can produce a good levbel of lactate, but the quantity in his muscles is little, and he can remove it in short time. I can vary length and gradient according what I need. Remember that in any type of training we can use different executions, that can become less or more interesting depending of the needs of every athlete.
Regarding the other question : I don't know Hadd, and I never heard to speak of him before this post. Of

sure, he is not Italian. I don't want to comment what other coaches wrote, I write what I normally do, and the reason for doing. But, you know, there are many system valid for coaching an athlete, and not an ABSOLUTE TRUTH.

Regarding the "intermittent training", this is a type of training derived from Interval-training, that in any case can be interpretated in many different ways.
The first using this type of training in systematic way was Gilles Cometti, a French coach specialized in the preparation of soccer players. They used to increase the specific speed endurance for a player, thru a big number of repetitions on very short distance (for example, 10 x 20-30m at max speed, controlling time with photocells, running ahead and coming back with a very little interval, about 10 seconds). But, for example, the type of training that I saw many years ago used by American 400m runners (may be one full lap with 10 steps in max acceleration followed by 10 steps without pushing, called, if I remember, "killer" with another word), is a type of intermittent training too.
This type of training is very much used by swimmers. They swim fast for 50m (in a long pool), then use only the time for turning (may be 5-10 sec.), and go again, for many times.
My friend Bonifazi, a physiologist that is also a researcher with Italian swimmers, told me that, using this training, you can keep the level of cortisol very low, having the same result of continue activity (without rest) under the point of view of the "shuttle" of lactate.
The classic type of intermittent that we use, for example, with some specialist of 800m (like Italian Andrea Longo) is 4 sets of 10x150m in 21.0 recovery 30.0, with 5/6 min among sets. The speed (about 14.0 every 100m) is about 92/93 % of the speed of the race (1:44.0 is 13.0 every 100m, so 1 sec is 7% of the time), and this fact is very good under biomechanical point of view. If you take blood at the end of every set, for checking the lactate level, you can see a very low level (may be about 7-9 mmol), SO THIS TRAINING HAS AN AEROBIC EFFECT. With Longo, for example, if we go for 6 km at 3:20 (with very low relation under biomechanical point of view : 20.0 is a speed of 18 km/h, 13.0 of 27.7, so the percentage is 65%), at the end we find a higher level of lactate (may be 12-13 mmol).
With long runners, I use also some time this training. For example, during winter, I use normal workouts of long intervals for increasing Aerobic Power (5-6 x 2000m in 5:40 for an athlete able running, in full season, 5 x 2000m in 5:20), with 3 > 2 min recovery, alternating with sessions where I use "long intermittent training", where I already use the speed of summer with short recoveries (for example, 5 sets of 5 x 400m in 63/64 with 20.0 of rest between tests, and 4/5 min between sets). In this way, I always have in my programs the "specific speed" that I want to train. In other terms, I use the final volume of training at lower percentage (may be 92 > 95 %, in the example of 2000m, 5:40 is 94% of 5:20 like intensity), and the final intensity that I want to build with many intervals, reducing step by step the duration of recovery.

Why hill sprints OR hill bounds, and not hill sprints AND hill bounds ? In fact, a good interpretation of the 2 workouts has a different goal.

1) HILL SPRINTS

The interpretation is : MAX SPEED, using high frequency with very high knees. Recovery is not important (1' or 2' or 3'), important is to start the next sprint when you are nervously ready. Physiological objective : RECRUITMENT OF THE HIGHEST POSSIBLE PERCENTAGE OF FIBERS in the muscules working.
This type of training is strictly connected with the nervous system. When an athlete runs slowly, he uses only a little percentage of the fibres of his muscles. Increasing speed, the percentage increases. Only running at the MAX possible speed it's possible to recruit the highest percentage of fibres. When for too long time an athlete doesn't use max speed, his ability in recruitment fibres decreases, and, when in competition he has to ask something to the FULL muscle, the answer is very poor. This is the only way for giving to the athlete the KEY for opening the door of the STORE, where he can find more energy for a final sprint (in case of lactic events like 800 / 1500m) or more fuel (after finishing glycogen in his slow fibers) in case of marathon.
So, short sprint uphill can enhance the ability in MAX SPEED (because there is an improvement in STRENGTH), and in ENDURANCE (in case of marathon runners), because they can find a reserve of fuel to use, coming from fast twich fibers.
The way to use hill sprints is as follow :

LENGTH / DURATION : 80/100m (12" / 15")
INTENSITY : Max
RECOVERY : Full
GRADIENT : 8-12 %
REPETITIONS : 10-15 (no more, because the nervous concentration, if the interpretation is ok, goes to decrease)
PERIOD : All the season. I used short hill sprints (10 x 60m) many times the morning of the day of the competition (if on track, by night), or the previous day in case of race in the morning. There is not really physical fatigue, as the production of lactate is very little. Full recovery is important in order to fully remove lactate.

2) HILL BOUNDS

This exercise is more connected with the development of MUSCULAR STRENGTH, less connected with the recruitment. The athlete has to bound using long jumps from one foot to the other, giving attention to the elastic reactivity of his feet. After a first period (during the GENERAL PERIOD of training, going to the FUNDAMENTAL) where this exercise is carried on distances of 30-50m, and the speed is not important, because the goal is to DEVELOP ELASTIC REACTIVITY.
After this first period, the athlete must increase the speed, bounding with steps longest possible, for the same distance (30-50m). In this case, this exercise has the goal to increase STRENGTH of the contractile fibres, not only the REACTIVITY of the elastic fibres.

The way to use HILL BOUNDS is as follows :

LENGTH : 30-50m
GRADIENT : 6-8 %
INTENSITY : 80% (general period), 90 % (fundamental period), 100% (special period)
RECOVERY : Full
REPETITIONS : 6-8 times
PERIOD : No in the SPECIFIC season

In the first long period of preparation (general and fundamental period, practically all Winter), athletes can use a MIXED system (Circuits for increasing STRENGTH ENDURANCE using both sprints and technical exercises : for example, 50m sprint + 30m bounding + 50m sprint + 30m heels to buttocks + 50m sprint + 30m skipping + 80m sprint, and at the end 10 squat-jumps on the same place). We need to use long recovery in this case (may be 6'/8') because in any case athletes must use MAX intensity in every part of the circuit, otherwise there is NO RECRUITMENT OF FIBRES IN LACTIC SITUATION.

This is the best system for building the ability in final sprint. Nothing to do with the MAX SPEED of an athlete, but with the ability in recruitment high percentage of fibres when muscles are full of lactate.

After a short sprint of 80m uphill, with top athletes normally 1'30" / 2' are enough, but with 800m runners sometimes we use about 3'. In any case, when we speak about FULL RECOVERY we mean that the athlete can start again when feels himself totally ready for repeating the same time previously run.

One rule about EVERY TRAINING having the goal to develop strength : THE FIRST STEP IS TO USE MAX CONCENTRATION AND MAX INTENSITY. This means that recovery is not important.

One rule about EVERY TRAINING having the goal to develop STRENGTH ENDURANCE (ability in using a high percentage of your max strength for long time) : THE FIRST STEP IS TO CUT RECOVERY TIME INCREASING THE GLOBAL VOLUME OF TRAINING. In this case, recovery time is one of the most important components.

The 2 workouts you propose have different goals. Short sprints (how I explained before) are very important for the recruitment of the most part of fibers of the muscles involved in the exercise. This goal is important during the full season, and that's the reason because we have to use this type of training always. The final goal is to stimulate the NERVOUS SYSTEM.

Hill 200m long have already different mean. The production of lactate is already significative, and we can use for increasing the ability in recruiting fibers WHILE saturated with lactate.

When you start to use in training 200m uphill, the evolution of this workout is TO EXTEND THE DISTANCE, so, trying to maintain the same speed, the athlete have to move to 250 - 300 - 400m, obviously opening recovery time. The target is to increase the ability in running with high accumulation of lactate, so the final goal is to stimulate METABOLIC and ENZYMATIC SYSTEM.

Using long and very fast distances uphill (between 300 and 600m) can give a big improvement in STRENGTH ENDURANCE, and an improvement in strength endurance can automatically provoke a good performance, also without any specific training on track. Some year ago, the Italian Giuseppe D'Urso (silver medal in 800m in WCh 1993) ran the best indoor seasonal time (1:45.47) in the World, without preparing the season, but only using long fast run for developing AEROBIC POWER (between 20' and 40'), plus intervals of 400 - 600m uphill, at his max speed, with long recovery.

In another thread, I explained that Shaheen runs, once per month, a long FAST RUN of 37-39 km at 3:15 - 3:10 pace at 2300m of altitude, also in full season. In training, nothing is negative. THE ONLY QUALITY THAT YOU LOSE IS THAT ONE YOU DON'T TRAIN. So, you don't lose speed if you go for long run, but if you don't go for speed. At the same time, you don't lose endurance because you train your speed, but because you don't go for fast long run.

The development of training is not to replace some type of workouts with some other, but to ADD something that you didn't use before. Training is the ability in stimulating your body in different directions. So, one stimula can be with more intensity, another with more duration at the same speed. We have to mix everything together, respecting a correct proportion between the different workouts.

Regarding long run and speed, I want to give you an example : Paula Radcliffe tried, for many years, to become faster in the last lap, working on her speed. In 5 or 6 years, she moved her PB in 3000m from 8:31 to 8:28, practically always the same situation. When finally, tired to be no. 4 in every race, she decided to move to full marathon, her first race after winning her first marathon in London in 2:18, less than 2 months later, was a 3000m. Final results : 8:22, improving her best of 6.0 !
Personally, I had a similar situation in 2000m, with my Italian athlete Maura Viceconte. We worked very hard for beating the Italian Record in Marathon. She ran, winning, Vienna in 2:23:47 (NR) in May. After this, she was able to increase her PB in 5000m from 15:45 to 15:18, and to beat the NR of 10000m running 31:05.54, improving her PB of 1 min from the past.

At the end of every discussion, the question is :
What I ask to my training ? I want to try to reach my best potential results, or I want to be fresh every day, running only for my health and my fun ? In the first case you must use long and fast run, with a correct modulation. In the second case, run slowly and enjoy your life, but don't speak about good results in athletics.

RE: Does it matter how fast you do your long runs? *5/23/2006 11:18AM* - in reply to Gē

Many runners, when read what I write, make a mistake : they think that the FINAL PART of the evolution in training must be related to the values of the beginning of their training. In other words, if you are able 15:00 / 31:10 and 65:00, of course you don't go for 66:00 in 20k. But, following the evolution they I suggested, starting from 33:00 for 10k, when you are able running 15k at the same pace (49:30) in training, of course you can run 10k in 32:00 in training, and your 15:00 can move to

14:45. So, you must read this type of training in dynamic, and not static, way. What I try to explain is that, if you spend one year for extending your ability in duration at the same pace, YOU HAVE ADVANTAGE IN ALL THE TYPES OF TRAINING SHORTER AND FASTER. You can run faster with the same type of INTERNAL LOAD, or you can run LONGER at the same pace, always with the SAME INTERNAL LOAD.
What you have to understand is that, if you want to increase your performances, you must push and move your limits, not to stay INSIDE the limits that you already know. Improvement is the ability to overtake the current limits in every type of training, for increasing your qualities. Instead, if you continue to stay inside what you are able to do, step by step you don't give any stimula to your body (the same for your mind, that's the reason for 39km of Shaheen....), so you SUPPOSE to train, but really you GO RUNNING. There is a big difference between TRAINING and RUNNING : the first has the goal to stimulate your body, AND THE ANSWER OF YOUR BODY IS THE TRAINING. The second is something good for your health, but forget that you can improve with this mentality. So, when finally you are able to train in 66:00 for 20k, your PB become 14:30 / 30:00 and 65:00 in HM. This is the way for improving.
The last example of how, increasing your specific fast long run, you can increase your speed endurance :

a) You are able running 10 x 400m in 64.0 with 60.0 recovery, 3 x 3000m in 9:30 with 3:00 recovery, and 10k continuous run in 33:00 (of course in training). Your INTERNAL LOAD (IL), if we go to control the lactate level at the end of every workout, can be respectively, for example (these are casual numbers, possible for somebody, very different for other athletes, but are an example) 12 mmol after 10x400, 9 mmol after 3x3000 and 6 mmol after 10km.

b) After 2 months, during which you continue to use same times, recovery and speed for 400m and 3000, but you increase the length of continuous run at the same pace, you become able running 15km in 49:30, with the same IL (6 mmol).

c) At that point, if you go to control the lactate level in the other 2 workouts, you can discover that after 10x400 in 64.0 your level is no more 12 mmol, but 9. At the same time, after 3x3000 you don't have 9 mmol, but 7.5. This means that you IL is not the same, and for running the same volume, speed, distance of 2 months before, your level of effort is minor. SO, IF YOU WANT TO REACH AGAIN THE SAME IL, YOU MUST INCREASE THE VOLUME (for example, running 15x400 in 64.0 with 1min recovery, or 4x3000 in 9:30), that it means an improvement in your ENDURANCE connected with less production of lactate at the same speed ; or to maintain same volume, same speed BUT REDUCING RECOVERY TIME (for example, 40.0 between every 400m or 1:30 between every 3000), that means again an improvement in ENDURANCE connected with your improvement in recovery, due to the fact that you are able to remove lactate from your muscles faster than before. BUT, IF YOU WANT TO MAINTAIN SAME NUMBER OF INTERVALS and SAME RECOVERY TIME, YOU CAN RUN FASTER : 10 x 400m in 62.0 rec. 60.0 (and at the end you have 12 mmol), or 3 x 3000m in 9:10 rec. 3:00 (and at the end you have 9 mmol). And also with your conyinuous run, you becoma able running 10k at 6 mmol in 32:00 instead 33:00.
This is why, working expecially for extending your SPECIFIC ENDURANCE (or POWER ENDURANCE), you can increase your SPEED ENDURANCE too.
On the other side, you can work for SPEED using short sprints climbing, or technical and neuromuscular exercises, plyometric exercises (only for athletes not good under the point of view of elastic reaction, for the other may be damageous) and gym, for very short duration.
So, SPEED is by mechanical engine, ENDURANCE by bioenergetical and methabolic engine.

Regarding the fact of very long run, I want to remind you that, for every type of event and for every specialism, we have 2 different kinds of typologies : the FAST and the RESISTANT. This fact depends from their morphology and their physiology, and in part on their psychology too.
For example, how many strong athletes of 200m can be better on 300m, but are not able to run 400m very well ? And, if there was the official distance of 600m, are you sure that could be Borzakovskiy of Bungei the winner, or not, for example, the best Mutua ? Don't forget that the distances of official T & F are conventional, and every athlete has to adapt his training to them, but probably could have a better distance for his attitude that doesn't exist (remember when, in the past, you have in US, during indoor activity, distance like 500y - 600y - 1000y, and go to see who were the record holders).
For example, if you are an athlete able running 200m in 22.0 and 300m in 34.0, you are RESISTANT ; if you run 21.5 and 35.0, you are FAST. In the second case, forget that you can become a good 400m runner. In the first case. move to that distance soon, and in 3-4 years you become able to run full 400m at the same pace of your 300m before (in this case, 46.5) or very close.
This for explaining that there are runners that NEVER IN THEIR LIFE CAN BECOME BETTER USING LONG RUN. Why ? Because their internal anathomy (muscles and organs) is the anathomy of a sprinter, with more fast fibres and different nervous ability, and a different hormonal system, and different psychology, etc.
Also among animals there is the same situation : the lyon is a sprinter, and, if is not able to reach the gazelle after 400m, goes to rest awaiting the next victim...
So, don't generalize what I write. My phylosophy in training is to find the best solution for obtaining the best individual results, following the best personal attitudes. But, in the amateur field, everybody wants to do the event that he prefers, not the best for himself. And I suppose that this is right. So, if I see Alan Webb running one mile, and I meet him on an elevator during a meeting with a T-Shirt with written "MILE RUNNER", I tell him "For you is better to write 3 MILES RUNNER" (may be that he remembers this fact), because I think that 12:52 in 5k is better than 3:32 in 1500, and probably in the future 26:40 in 10k can be better than 12:52, and also in the last lap of 10k he can be the faster, in the last lap of 5k can win a medal, in the last 300m of 1500 of sure he has 5 athletes ahead him. So, my advice for TOP ATHLETES regards the way for reaching their best results, not what they prefer of like. But for all the other, I suppose that you must do what you like.

I fully agree with Antonio that the "definitions" of every type of training starting from a physiological point of view are useless and, the most part of time, not correct.
The fact is that every kind of training provokes several effects on the physiology, not only one, and these effects can be different for the same athletes and for the same "external load" in different period of the season.
Therefore, a good coach must know the reason of different type of training, but cant consider it as "mathematics", since the final goal (running faster in our case) depends on a combination of factors, each one depending on several variables (weather, shape at the moment, psychological situation, opportunities of competitions, musts with sponsors and organisers, private problems, etc.).

In any case, I want to explain my philosophy about training, valid for every distance where we need endurance.
We have several steps (or stairs) of intensity, every step connected with some physiological effect, and we need to use ALL THESE STEPS, of course with different percentage, according to the event we want to prepare.

A) ANAEROBIC (LACTIC) POWER.

It's the ability to produce the higher quantity of lactate per second. We can measure this ability dividing the total quantity of lactate produced inside the muscular fibres per the time of the performance.
This means that for different kinds of attitudes (for example, for a specialist of 400 vs. 800 vs. 1500m), depending on different kind of fibres (percentage of Fast or Slow, and of Fast II Type), the distance and the duration of the exercise is different.
The practice of training suggests the following parameters for researching the individual Lactic Power :
a) For a 400m runner, a distance between 300y and 300m
(duration 25" / 32")
b) For a 800m runner, a distance between 500 and 600m

(duration 60" / 1'15")
c) For a 1500m runner, a distance between 700 and 900m
(duration 1'30" / 2')
d) For a specialist of 5000m, we don't look at this parameter

The LACTIC POWER is the most important and specific quality for 400m runners, and reduces the importance while the event becomes longer.-

B) ANAEROBIC CAPACITY.

It's the ability to produce the higher quantity of lactate in short time. Under this point of view, it's directly depending on the LACTIC POWER. This is a specific attitude for 800m runners.

When we speak about training, if for example we have an athlete able, in a test, to run 500m in 62", a training for increasing his CAPACITY is 3 times 500m in 65"5 (95% of his Power) with 6' / 8' recovery.

c) ANAEROBIC RESISTANCE.

It's the ability to work with a very high quantity of lactate in the muscular fibres. This quality can be bettered working with two goals :
a) To increase the ability in "saturation" (the fibres can sustain more lactate)
b) To increase the ability in "removing" lactate from the fibres.

The physiological goal is to improve the permeability of the membrane, first of all.

Under the methodological point of view, having as example the same athlete, a training for Anaerobic Resistance is 10 times 500m in 1'12" (85% of the Power) with 1'30" / 2' recovery.

This quality is connected with the AEROBIC POWER, more than the ANAEROBIC CAPACITY. Therefore, I don't agree the definition that we can find in the most part of Training Books, speaking about CAPACITY only.

For example, a training of Steve Cram (10 x 300m in 39" / 40" with 40" of recovery), clearly in the lactic area, was possible because of his very high AEROBIC POWER, that allowed him in removing very quickly the lactate, limiting the its final quantity in his fibres.

One thing is HOW FAST we can produce lactate, other thing is HOW MUCH lactate we can produce in long time, and yest another thing is HOW MUCH ACCUMULATION we can accept having still the possibility to work.

D) AEROBIC POWER.

This is the ability to produce the highest level of lactate, remaining in Steady State (MAX LASS, max lactate steady state). Like the LACTIC POWER, this quality has different level and different duration, depending on the event. For example, in top runners of 10000m (26'30" / 27') the athletes can have a period of about 17' / 20' during which they run at an almost even level of lactate (about 7-9 mml), without the typical graphic we can find in all the books of physiology (continue increase of the level following an exponential line). This is an attitude typical for top specialists, partly genetic, but partly depending on the type of training.

At the end of every thing, the real way for improving in ALL THE QUALITIES bases on very clear principles :

a) Using EVERY type of training (of course in different percentage, according the seasonal period) with every athletes, and for every event

b) Using this training DURING ALL THE SEASON (there is no more a long period WITHOUT some training of speed, or, in case of 800m runners, without some training of Aerobic Power)

c) Using a training of SPECIAL QUALITY, always looking for EXTENDING its volume.

For example, the most important difference between the classic Marathon Training of Lydiard and the current

system, for long distances, is that now we don't start every season with long run very slow (in the 60 years, athletes with the WR started their training in November with 3 hours at 8' per mile, for increasing the "capillarization", following the system of Van Aaken). Now we know that, running long, we can reach the max level of capillars in 2 years time, after running slowly is useless. So, while 50 years ago the athletes ran VERY LONG and SLOW, combining with intervals VERY FAST and SHORT, now the best athletes run (VERY) LONG and FAST (the first having this intuition was Ron Clarke in the period 1964-68)

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I want to explain again the base of my phylosophy.

a) We have 2 different engines : mechanical (muscles) and bioenergetic. Our mechanical engine is the structure of the car, bioenergetic, that regards the internal systems (cardiovascular apparatus, enzymatic system, etc), is the engine of the car. So, like in a formula 1, we have to develop both engine and structure in well balances way. If we have a very strong bioenergetic engine, but our structure is not strong enough, we cannot use PRACTICALLY our metabolic quality, because we are not able running fast enough. At the same time, if we have a very powerful structure (for example, a thrower) not supported by the organic engine, we cannot last at high speed for the total duration of the race.

b) In the GENERAL PERIOD, we must work for increasing our qualities, with separate goals. During this period, we must train both our lacks and our talented qualities, in order to reduce the first one and to enhance the second.
So, we must carry out specific training for increasing strength, general resistance, ability, frequency, cohordination, flexibility, etc, WITHOUT ASSEMBLING THESE QUALITIES in combined way.

We need to increase strength, in order to become faster during the competition season ? We use light weights (if we have), short sprints uphill, exercises for muscle strength.

We need to increase general resistance, in order to build a better base for developing specific endurance ? We go for long run, increasing for 4-5 years both duration and speed, without going in very fast execution.

We need to increase local resistance, in order to build a better base for developing lactic capacity ? We go for circuits with different stations, carried out at high intensity, using gym and not specific exercises.

c) In the FUNDAMENTAL PERIOD, we put in our training some SPECIAL type of training. Special is a training that is not fully connected with the event, but is propaedeutic for the SPECIFIC event. For example, for a runner of 800m, 3 x 600m at 98% of speed (for an athlete having 1:50, we can suppose a passage in 1:22.0 = 13.7 every 100m. So, 98% of this time is (13.7 + 0.3)= 14.0, meaning 1:24.0 in 600m) with 6/8 min recovery, is SPECIFIC, 10 x 600m at 90% = 1:30.0 with 3 min recovery in SPECIAL, 15 x 600m at 75% = 1:42.0 with 1:30 min is FUNDAMENTAL, 12 km at 3:45 pK is GENERAL

d) In the SPECIAL PERIOD, we increase the intensity of everything, preparing our body for SPECIFIC TRAINING, that we have to carry out at intensity of 100-105% related to the speed of the race.

e) In any project of training, we never can lose what already we have. So, staying too long time without training some quality is ALWAYS a mistake. Today, it's not possible to apply Lydiard system, because the athletes have to compete frequently. If in 1960, without indoor activity, Peter Snell or Herb Elliot had a long period only for training without competing (the duration of summer season was very short), and they could use 3 months only for long run building a big aerobic base, now we must modulate our training in different way. An athlete ending the season with 1:45 in September, in December must be able running in 1:47, not in 1:52, and this means that he has to continue to train speed (climbing) and dynamic qualities ALSO when the main goal is to develop AEROBIC RESISTANCE.

d) If an athlete is able to reach a level of 20 mml, during winter ALWAYS must be able to reach 18, not only 12. Remember that too much training in slow run can develop the enzyme SDH, that face the enzymes LDH and CPK. So, we must always to use some training for maintaining at high level our ability in producing LDH and CPH.

e) But, if an athlete has an AnT of 16 km/h, he must use the GENERAL PERIOD for raising to 17 or 18. So, he has in any case to increase volume and speed of his long run.

f) When you go to the competition season, you have to maintain the basic training, changing the percentages of every type of work. You must remember that, if we go for something SPECIFIC, we produce a lot of lactate. Our problem is the ACCUMULATION of lactate in our fibres, not the high level. For example, if you are able to reach a level of 20 mmol running 400m in 48, and also 20mmol running 800m in 1:48, the quantity of lactate in your fibres is not the same. So, for removing the lactate produced in 400m, reaching a level of 6 mmol, you can spend 2 hours, for removing the lactate produced in 800m you need one day (these are examples, don't think that this numbers are the same for everybody).

g) In order to aid a quick removal of lactate, your level of AEROBIC POWER (AnT) is fundamental. Athletes with a high AnT are able to remove their lactate quicker than athletes with low AnT.

h) In order to develop your max. specific quality, you must be FRESH in your mind and your muscles. When you work for increasing your ability in ACCUMULATING you can be tired, but this can happen only in General and Fundamental period. When you qork for increasing your ability in PRODUCING you must be Fresh, this happens during SPECIAL and SPECIFIC PERIOD. Therefore, athletes can have care in recovering before going for a training of high quality. When you go in SPECIFIC season, you use more intensity (and remember that the intensity in middle and long distance is a specifism of EXTENSION AT THE SPEED OF THE RACE), consequently you must use more recover.
COMPETITIONS ARE THE HIGHEST QUALITY TRAINING.

i) When you use max intensity, you empty your nervous tank, so before the next workout in the same direction you need to fill it again. MEDIUM INTENSITY TRAINING is the key for filling your tank after a high intensity training or a competition.

Tinman, if I use some term not correct, please help me explaining in a good English what I wrote.

To enjoy training doesn't mean to train easy, but to train with the max motivation. This is possible when the athlete has full confidence in his training.
Every top champion well knows that SOME session of his training must be very, very tough. But, when this is HIS PERSONAL CHOICE, coming from his mind because he is fully confident in what is doing, he can accept, and also enjoy, the highest level of sufference.

The problem starts when some athlete fears a very tough training, and when his type of training brings him to an exhaustion.

In order to avoid this "refuse" of hard training, the solution is to use a very big modulation. The athletes must be mentally and physically fresh, when have to go for the hardset workouts, but, without them, nobody can become a top champion.

The top champion enjoy to win, and well know what has to do for winning. And enjoy to test himself at the higher level of sufference. But doesn't enjoy running as an amateur, because in his mind this is to waste his time.

So, it's important to understand the difference between running easy (that is no training, but fitness) and training very hard. The real problem is how to distribute the hard training in a project. Too much intensity (not in one single session, but with continuity) brings every athlete to a status of reject hard training, because ALWAYS mentally and physically tired, and in this way is no more possible to produce high quality in his training (a lot of fatigue for bad results).

Peter, I don't use any micro or macro or meso cycle with middle distance runners.
In the history of methodology, periodization (or better, CLASSIC periodization) was something coming from scientists specialists of the strength and of the nervous system. The first studies were done by Zachorskiy, followed by Verchosanskiy, all from Soviet Union. The first top application ofd these methodology was with

throwers. The best coach applying this system was Bondarchuk, former WRH of hammer, that became the coach of Yuriy Syedikh (still WRH), Juri Tamm, Sergeiy Litvinov and Igor Nikulin. They used to come for 2 months of training in Italy, Tirrenia, and I've the opportunity to have a lot of talk with them.
Following this system, coaches for middle and long distances in Soviet Union were able to complicate all the idea of training, losing completely the road of practic application of the principles.
In 1990, I was responsible of Italian Team, we went to European Championships in Split, winning the following medal : silver in 800 (Viali), silver in 1500 (Di Napoli), gold in 5000 and 10000 (Antibo), bronze in 10000 (Mei), gold in steeple (Panetta), bronze in steeple (Lambruschini) plus the 4th place of Carosi, gold in Marathon (Bordin) and silver (Poli) plus 4th place of Bettiol, bronze in 3000m W (Brunet), 4th in Marathon W (Scaunich), National Record in 10000m W (Dandolo, 5th).
During a session on the road with the athletes of long distance, while following with a car, I saw something strange in another car following me. There was a man, out of the window, with a videocamera, recording..... 25 km of long run at 3'40" - 3'30", even pace !
The next day I saw again this man, hidden behind a tree, recording everything about our warm-up. So, I went to him, asking who was and what he was doing. He, with a very bad English, explained me he was a Soviet coach, wanted to learn from the best European Country. I told him that, because we learnt many things from Vladimir Kuts, Pyotr Bolotnikov, and, in 1978, Antipov and Fyedotkin, probably it was better if they could continue their old experiences, instead moving for a new "Periodization" with macro-meso-micro, completely wrong for our type of events.
The situation of training is very simple :

a) You have to build up your aerobic base, and this process can last about 10 years, growing at the same time both in extension and in intensity

b) You have to build up your body, and this process can last again 10 years, using correct weight in order to increase the strength you can specifically use in your event

c) You have to improve in your ability (coordination), in order to reduce the cost of running at the same speed

d) You have to build your mind, thru the increment of volume and intensity, making easy what, before, was difficult.

In this situation, the most important points are :

1) NEVER you have to lose what you were able to conquire. This means that, if you are a 1500m runner able to run at the end of your winter season, 1 hr at 3'30" (17 km), you CANNOT reach your best results if, in July, you are able running 10 x 300 in 42" with 1:00 recovery, but in 1 hr you are only more able to run 15 km. TRAINING IS TO ADD, NOT TO REPLACE.

2) NEVER you have to stay too long time without competing, for maintaining the nervous level and the motivation at a high percentage (never under 85%). Everybody knows that it's very difficult to plan long periods of training without competitions, and in our events we, fortunately, can run different distances, according with the technical program we are using at the time. This situation is not possible in technical events (this is the main difference between throwers or jumpers and middle distance runners) where who is a javelin thrower can compete only in that event, but, during the periodization,also throwers used our same system, for example a period throwing with more light implements (Shot 6 kg, or Discus 1.75, or Javelin 600 gr) when want to improve speed, and another period with more heavy implements when want to work for strength.

3) not less important, referred particularly to professional runners, don't forget that their profession is to run, they can earn money only thru the competitions, so they can use competitions during the most part of the season, also when are not in top shape, as training. In which other events is possible to be paid for your training ? Life is something real, people has to eat, and with micr0-meso-macro without competitions you don't eat, if you are Kenyan, Ethiopian or, also American and or Australian.

Don't forget that Russian athletes were Statal professionals, they had a salary and were paid for training before competitions. And, not only, at that time, in URSS it was not possible to have a private activity.

And also don't forget that the "pariodization" and the "methodology" of Countries using doping as basic plan must be very much different from what you can do without using drugs, apart the motivation.

For top results, we need top quality, and, for training and growing in top quality, we cannot "squeeze" too much the training (for example, intervals every 2 days), because the body becomes tired, not more able to have a correct supercompensation, and no more able to produce quality. So, we need to have MORE MODULATION between speed and endurance, quality and extension, in order to create the base for exhalting the personal quality.

Aerobic power is the aerobic base of intensity, useful for every particular event. In my opinion, it's wrong to speak of "SPEED" as something of objective, the same to speak of "AEROBIC POWER". It's obvious that speed for a specialist of 800m or for a Marathon runner are two different thing. For me, every speed 10% faster then the speed of the event is FULL SPEED. For example, for an 800m runner (1:44), having a speed of 13.0 every 100m, 10% of the time is 1.3, so speed 10% faster is 13.0 - 1.3 = 11.7. We don't need faster speed in training, under bioenergetic point of view. May be that we use, sometime, faster speed (for example, repetitions of 60m at full speed), but this is for mechanical reasons, and is not the most important part of training. THE PHILOSOPHY IS TO EXTEND THE ABILITY TO LAST AT THE SPEED OF THE RACE, so we have to train using, mainly, speeds between 95% and 105% of the speed of the race, of course with different distances. In this case, we can use these types of training :
a) SPEED (biomechanical goals) : from 60m to 150m, full speed (very few repetitions)
b) HIGH SPEED ENDURANCE : distances from 100 to 400m, speed at 105% (in the case of 1:44, it means for example 4 sets of 5 x 100m in 12.2, rec. 1:30 between tests, 5:00 between sets, or 2 sets of 5 x 200m in 24.4, rec. 2:00 among tests and 5:00 among sets, or 2 sets of 3 x 300m in 36.5, rec. 2:00 / 5:00, or 2 couples of 400m in 49.0, rec. 3:00 among test, 6:00 among sets)
c) SPECIFIC SPEED ENDURANCE : distances from 300 to 600m at the speed of the race (for example, 3 sets of 3 x 300m in 39.0, rec. 1:00 among test, 4:00 between sets, or 5 x 400m in 52.0 rec. 3:00, or 4 x 500 in 1:05 rec. 4:00, or 3 x 600 in 1:18 rec. 6:00)
d) LOW SPEED ENDURANCE : distances from 600 and 800m, at a speed of 95% (in this case, 13.85 every 100m), for example 600 / 800 / 800 / 600m rec. 6:00, in 1:23 and 1:51
e) SPECIFIC AEROBIC POWER : distances from 800 to 1000, total volume 3 - 4 times the distance of the race double of the distance of the race, at 90% of speed (in this case, 13.0 + 1.3 = 14.3), for example 4 x 1000 in 2:23 rec. 6:00
f) BASIC AEROBIC POWER : distances from 1000 to 2000m at 80% of the speed of the race (in this case, 13.0 + 2.6 = 15.6) for a global volume of 5-7 times the distance of the race (for example, 1600 / 1400 / 1200 / 1000, rec. 4:00, in 4:10, 3:38, 3:06, 2:35)
g) GENERAL AEROBIC POWER : distances from 2000m to 6000m, at a speed of 70/75% (about 16.5 verey 100m, 66.0 per lap). For example, 2 x 3000 in 8:15 rec. 5:00, or 5000m in 13:45.

On the contrary, if we speak about Marathon, Aerobic Power is something FASTER than the Marathon Pace. In this case, we can use shorter distances (for example, 4 times 5000m) at a speed till 5% faster than the race. If you run a marathon in 2:10 (3:05 per km), your AEROBIC POWER can be developed at a speed of 2:55 / 2:57. In this case, 4 times 5000m in 14:40 are HIGH AEROBIC POWER.

And, about speed, running at 2:45 per km is FULL SPEED. So, when we speak of speed for a Marathon runner, we mean 10 x 1000m in 2:45, or 5 x 2000 in 5:30, or 3 x 3000 in 8:15, not 20 x 100m in 14.0, really useless.

At the end, when an athlete runs a distance of 20% of the full distance of the race, faster than the pace of the race, THIS IS SPEED ENDURANCE, having a metabolic influence on his bioenergetic system. When he runs an inferior percentage of the full distance, THIS IS SPEED, having an influence on his biomechanical system.

Michael, sorry for destroying your dream to see Kenenisa and Shaheen together in Edinburgh again, but at the moment Stephen is out of training for an injury. I go back to Europe next Friday, 15, and on 20 I go to pick him in Zurich, for going to Freiburg for the last control with a famous German Dr. If everything will be ok, Shaheen can start his training, very soft, at the beginning of January. This means that he cannot compete before March. So, if you read from some organizer that Shaheen goes to compete, you know that it's not possible, and the information is false.
Regarding the workouts of specific Aerobic Power for 800m runners, I want to remember that there are two

different typologies of runners : fast runners (for example, Juantorena, Konchellah, Susanj, Fiasconaro, Everett, Borzakovskiy) coming from 400m, and resistant runners (Coe, Cram, Yiampoy) able to run very fast 1500m. Of course, a workouts of 4 x 1000m in 2:23 is something for a RESISTANT RUNNER. Shaheen did in August, before Zurich, a training like this : 4 couples of 1000m (2:00 rec.) + 300m (recovery 4:30 among couples) in : 2:25.6 / 40.8 - 2:24.8 / 41.3 - 2:24.2 / 42.0 - 2:23.2 / 40.3. According to my opinion, before Zurich Shaheen could run 3:29 in 1500 and, if could try a race of 800, about 1:45 on that distance.
I don't think absolutely that working for Aerobic Power can reduce the Aerobic Capacity. Instead, it's true that your Aerobic Power decreses if you work too much in the lactic area. And also, I'm not complete owner of English Language, but which is the difference between Aerobic Power and Aerobic Capacity ? May be that I use other words for telling the same thing.

When an athlete is tired, we have to change his training, depending on the period of preparation. Our behavior must be different if we are during GENERAL PERIOD or during SPECIFIC PERIOD. During General Period we must take care of our INTERNAL LOAD. This means that the most important thing is the level of the ANSWER of every athlete to the training proposal, not the objective result of his training. For example, if I plan for an athlete 10 x 1000m in 3:00 with 200m jogging in 1:30 of recovery, and I suppose that this training is at 90% of his effort, but there are reason (cold, wind, personal problems in his job, beginning of a sickness, etc...) that don't allow him to run in 3:00 but in 3:10 with the same level of personal effort, the athlete must do his training running 3:10, because his internal load is the same. During General Period we must work for increasing the qualities of the athlete : strength, resistance, cohordination, rapidity. In this period, the athlete must work very hard, also if feels tired.
About 2-3 months before the main goal of the season (for example, for athletes sure to go to World Championships in Osaka, starting from beginning of June), we change our philosophy of training, starting with the SPECIAL PERIOD (lasting about 4-5 weeks) followed by the SPECIFIC PERIOD (lasting about 6-7 weeks). The difference between the two periods is that during the SPECIAL we begin to put in training exercises, speed and distances connected with the event that we want to prepare, during the SPECIFIC we go to prepare the event in more targetted way. During these two periods, we must look for the EXTERNAL LOAD. This means that we must respect the EXACT SPEED THAT WE WANT TO PREPARE. For building a performance, external load is mathematic. For example, if I want to prepare my athlete for running 5000m in 12:45 (it means 2:33 every km), we must use a lot of intervals at a speed of 15.3 every 100m, or between 14.5 and 16.0, for specialising biomechanic and methabolism of the athlete in optimizing this type of speed. We can use essentially distance connected with the event, not shorter than 400m (56.0 >`` 58.0) and not longer than 2000 (5:05 %%< 5:20), for global volumes not inferior of 1.5 time of the full distance (7.5 km) and not superior of the double (10 km). In this period, if the athlete, for some reason, is not able to run the specific speed, it's better than he can reduce his training for 1-2 days, in order to become able to use the correct quality. During SPECIFIC TRAINING THE ABILITY TO RESPECT THE SPEED IS VERY IMPORTANT : if the athlete is not able, it means that is not able to run fast as we planned.
Regarding the intensity of special circuits for strength endurance, THIS IS MAX IN EVERY TYPE OF EXERCISE AND SPRINT. The goal of this training is to make the athlete able to recruit the highest percentage of fibres in his muscles, WHILE FULL OF LACTATE. So, if we want to increase the ability in recruitment the most part of fibres in our muscles, we use short sprints at max intensity, because this attitude is connected with the activity of the nervous system. But, in our distances, we must become able to recruit high percentage of fibres when our muscles are satured of lactate, because our main problem is not the high level of lactate, but the accumulation. So, the best way for being able to use your speed when there is accumulation of lactate, is to use different continuous exercises and sprints at max intensity, with long recovery. Using this type of training, all my athletes improved a lot their final speed : typical the case of Moses Mosop, never fast in the final, that was able running in 53.8 last lap of 10000m in Helsinki, winning bronze medal. So, my opinion is that THE ABSOLUTE SPEED OF AN ATHLETE IS LESS IMPORTANT THAT HIS ATTITUDE IN USING HIGH PERCENTAGE OF THIS WHEN YOU ARE FULL OF LACTATE. Improving your speed, you not always are able to improve your final lap in a long competition. Instead, improving your strength endurance, you become also able to increase your absolute speed. So, now I can suppose that Shaheen can run in 49.0 or something less (not better than 48.5 in any case), and this means 1:45 in 800m, working for increasing his SPECIFIC ENDURANCE and his STRENGTH ENDURANCE, during the last 5 years.

Regarding hill sprints, during general period, my athletes use twice per week this type of training. When they move to the fundamental period, we use 3 times every two weeks, during the specific period always once per week, sometime twice. But, for example, I use (when possible) few repetitions (may be, 6 times only) also

the day before the race, or the same day of the race, if the race is by night. The goal is the recruitment of the most part of muscular fibres, the same situation of sprinters or jumpers when they carry out some workout with weights soon before the competition. About the gradient, we start with hard grade (may be near 20%) during the general period, then gradually we move to easier hills (in any case, never easier than 10%) in order to develop higher speed. There is not a rule for this type of workout : it's not possible to decide how many tests for every workout. It's the coach that has to decide the number, and how many workouts per week. Not all the athletes need the same quantity of this type of training, exactly like not all people need the same quantity of a medicine, depending on the level of their sickness.
Because this is a very easy and useful way for increasing strength, of course is a type of training recommanded for high school too. The only attention must be for the execution : use always long recovery, this is not a training for ENDURANCE, but for STRENGTH. For STRENGTH ENDURANCE we use the type of circuits we described before. It's exact the interpretation of the poster, changing volume, intensity and distance according different events, and different periods.

Also if we are all human being, there are big differences between the morphology and the physiological characteristics of every person. For example, we have different type of fibres :

a) Type I fibres, known as SLOW RED TWICH FIBRES (ST), that contain a large number of mitochondria, are surrounded by a fit network of capillaries and are capable of using a great amount of oxygen per minute. These fibers use the AEROBIC SYSTEM to produce the energy required for muscle work.

b) Type II fibres, known as FAST WHITE TWICH FIBRES (FT), that are best suited to swift efforts, but usually have a lower endurance. They use the ANAEROBIC LACTIC SYSTEM which entails the production of lactic acid. These fibres are grouped in two subtypes :

** Type IIa fibres, known as FAST TWICH OXYDATIVE (FTO), because can use a significant amount of oxygen. From this point of view, adequate training may bring them to be very similar to type I fibres. Endurance training mainly influences these fibres and increases their fat stores.

** Type IIb fibres, known as FAST TWICH GLYCOLITIC (FTG), because they use glycolisis, staying in the ANAEROBIC SYSTEM that leads to lactic acid production. These fibres CANNOT BE INFLUENCED TO USE THE AEROBIC SYSTEM, the one involving oxygen.

Athletes as Rudisha or the other I named before, are "animals" with high percentage of FTG. For these type of "animal", the training for aerobic resistance cannot give any advantage, instead can produce depletion in the activity of their fibres.

The aerobic activity at low intensity can be fundamental for athletes having a high percentage of ST, because they can build a better capillarization and can enhance the mitochondrial activity. The most important result can be a best production of SDH (succinic-deidrogenasis), the main aerobic enzyme.

On the opposite way, too much activity in this direction can inhibit the activity of LDH and CPK, enzymes that are mainly in FTG.

So, of course also these type of runners need a better aerobic support. But this must be done using a speed connected with their morphological characteristics.

For better understanding this, go to see the other thread about GIANNI GHIDINI 800/1500m training.

Hodgie-san, what you say is correct, but your approach is too much influenced by the idea of marathon.

If it's true that the key is to work for enhancing the SPECIFIC ENDURANCE, the problem is to understand what SPECIFIC ENDURANCE means.

In the most part of the posts about Lydiard system, there is confusion between GENERAL RESISTANCE and SPECIFIC ENDURANCE.

The high mileage at slow pace has two goals only :

a) To increase the capillarization, but this works for short time only. In the first two years from the beginning of running, if we increase the mileage we arrive to FINISH the possibility of improvement in that direction. This is one of the big difference between a modern merhodology, and an old methodology (for example, Van Aaken), that supposed possible to continue in the capillarization for many years, every time running at slow pace. I remember Michel Jazy, already able to run 3'36" / 5' (WR) / 13'24", starting every year from 3 hourse at 5' per km. That's the reason because he ran "only" 13'24", while with a modern approach could be easily under 13'.

b) To be used as Regeneration, after fast workouts. Under this point of view, also today we use this methodology, BUT NOT LIKE TRAINING ABLE TO BUILD SOMETHING. One thing is to train FOR improving, another is to RECOVERY the real training.

So, the GENERAL RESISTANCE can be considered as the base for the SPECIAL ENDURANCE, and has a role only at the beginning of the activity (when you are very young), or, for short time, at the beginning of the season as introductive aerobic training, lasting no longer than 2 weeks.

Instead, we have to understand what the SPECIFIC ENDURANCE is.

Endurance is not a term with only one interpretation.

Every event needs Endurance, but this is the ability to extend your peculiar natural qualities. If you are a sprinter able running 10.0 in 100m, running 300m in 35.0 is ENDURANCE, running 1 hr slow is nothing, because there is no connection under the biomechanical and bioenergetic point of view.

This is the main point many people don't understand : they think that ENDURANCE means to run a lot of mileage, without giving importance to the INTENSITY of the endurance.

Another thing not clear is when people speak about HIGH MILEAGE. What does it mean high mileage ? Is 100 miles per week a high mileage ? For a 800m runner Fast type is not high, is damageous. For a 800m runner Resistant type can be ok. For a marathon runner is low mileage.

When somebody starts to think that THERE IS NOT A MILEAGE FOR RUNNERS, THERE IS NOT A SHAPE, THERE IS NOT A GLOBAL SYSTEM, but there are different specifisisms according to the athlete and the event, finally we start to live in a modern era for the training of middle distance, and we can finish to think that, for running fast, we need to use doping or some strange aid, because the performances are "out of the human possibilities".

Do you think some athlete running 400m in 45" can have a prevalence of slow fibres ?
In Africa, when a lyon is hungry, he waits for a gazelle. When the lyon sees a gazelle, he start running very fast for reaching it, in order to hunt it. If, after 400m, the lyon is not able to reach the gazelle, it has to stop, to lie down, and to wait for the next gazelle (may be after 5 hours) after recovering from its effort.
If you are a sprinter (and the lyon is), never you can become a runner of middle and long distance (and the gazelle is).

Now, I ask you some question.

Supposing you put Bolt in a training for long distance, what do you think he can be able to do in 3000m, after 6 months of training ? And what about his 100m ?

If you have a challenge between a middle distance runner with a PB in 3000m of 9', and Bolt, on a distance of 3400m, with the first 3000 in 9'30" and last lap free, aho do you think is the winner : the middle distance runner of Bolt ?

My answer is clear : the middle distance runner. Supposing Bolt able running 3000m in 9'30" (I'm not sure he

can do), his lactic level is already so high that he cant run the last 400m under 1'10", and I suppose the middle distance runner can run 65".

Every "animal" needs his own training, according to his physiological and morphological characteristic.

I'm with you that with long run everybody can increase his general resistance. But, when we speak about professional athletes, that have to look for the best results they can reach not in one determined event, but in their best event (so we have difference between an athlete that likes running one distance for fun, and an athlete that NEEDS running his best distance : may be his best distance is not the one he prefers. So, for a top athlete, is not important WHAT YOU LIKE, but WHAT YOU NEED), we always need to consider the balance between how much a type of training can give, and how much can take away.

Of sure I'm not one coach saying that long run reduce the speed. I say that the only training "damageous" is what you don't do. However, in every specialism we have to respect the percentages between specific training and general training. If for a marathon runner full speed can be considered "general efficiency", and there is not big difference if you use or not in training, looking for the final performance (in marathon, of course), for a sprinter long run is not damageous if you do this once every 2 weeks at regeneration speed for 40' only. Instead, when you speak about "Lydiard system", you speak about a type of training where the long run is the base for every specific development. When we speak about athletes having a prevalence of FT, this is ALWAYS a big methodological mistake.

This is the point : how we can define SPECIFIC endurance ?
For a marathon runner able to run at 3'per km (2:06:36), every long run inside 3' and 3'20" has a SPECIFIC impact. The long run inside 3'20" and 3'40" has a SPECIAL impact (it means is the support for the SPECIFIC). Every other speed is in the field of REGENERATION : under the organic point of view, it's useless, also if we continue to use for other reasons (adaptation of the body structure to the distance, adaptation of the mind).
SPECIFIC is everything inside 90 and 100% of the race pace.
SPECIAL is everything inside 75 and 90% of the race pace.
RIGENERATION every speed slower than 75%.

But this, that is true for a marathon runner, is not true for a middle distance running.

This type of athlete has little lactic power (may be not able to reach 8 mml after 600m at his fastest speed), and a "ratio" between his An Threshold (we can see his best time in HM) and his marathon pace of about 5% (example : 95% of 60'in HM is 63' x 2 = 2:06').

If we speak of a runner for 3'30" in 1500m, he needs to have completely different characteristics. He needs to have a lactic power of 16/18 mml if type fast, of 14/16 if type resistant. His VO2 max is higher than the VO2 max of the marathon runner. We are not interested in a very high An Threshold, but in a very high MAX LASS (maximum lactate steady state). HIS SPECIFIC THRESHOLD IS TO BE ABLE TO STAY FOR 15' BETWEEN 10 and 12 mml, for example, without peaking to early.

The question is : which connection can we have between slow basic run at level of 2-3 mml, and this type of SPECIFIC THRESHOLD ?

You speak about Steve Scott, for example. I don't know how long was the run of Steve, but I know that you can't compare his activity with the activity of Peter Snell. How many competitions Steve Scott as able to do in his best seasons ? If I well remember, he was one of the athletes producing more quantity of results during his seasons, and at the beginning of the seasons never was able running too fast. So, his shape came using frequent competitions (quality) and reducing mileage, step by step, during the season.

Don't think O don't believe in mileage. I have athletes running 140 miles per week, and are specialists of 5000m. But this only for a short part of their career. When they already built their "aerobic house", I use a higher percentage of intensity (never going under 80% of their specific speed) and, of course, I reduce their mileage.

I repeat : the secret is to increase ALWAYS the volume of SPECIFIC TRAINING. So, during the development of a full career, if we start with 85% of general mileage, good for building up capillarization and different kinds

of adaptation, and only 15% of specific mileage, after 5-6 years we have no more than 50% of general and 50% of specific, and at the end of a long career (something that for example Peter Snell or Herb Elliot didn't have, but John Walker had) we reduce the general to 30%, enhancing the specific to 70%.

This was, for example, what I did with Shaheen. He started with me with very little mileage (less than 60 miles per week) in 2001, we went till average of 120 in 2004 (in winter, of course), and again we reduce to 100 in 2005 and 90 in 2006. However, we continued to increase the SPECIFIC LONG RUN in some single session, till 37 km in 2:01 in 2005 (not in winter, but in July, before winning WCh). So, what we cut was the long slow run, because didn't have any organical function, but on the other side was a way for stressing the body for nothing (tendon and joints).

We have to distinguish between HIGH AEROBIC RUNNERS and HIGH ANAEROBIC RUNNERS. It's clear than we can have advantages in enhancing the volume of training in the first case, not always in the second case.

I read with great interest all the posts about this argument.
Of course, there are differents points of view, and to find a common idea about training is not possible.
However, I think there is a basic error in all the discussion.
The most part of people in this thread speak about TRAINING SYSTEM FOR ONE DISTANCE (in this way of discussing, Snell becomes equivalent to 800m). This fact doesn't exist, and is one of the biggest methodological mistakes.
THERE IS THE TRAINING FOR AN ATHLETE, not the training for a distance. Is one of the most important tasks of a coach to be able to individuate the best event of an athlete for his career, and to mould his attitude in direction of his future best result.
Every athlete has some different attitude, and there is NO EVENT where it's possible to find exact mathematic investigation about the percentage of intervention of different qualities. When some pseudo-scientist tries to do this (for example, 800m is 60% anaerobic and 40% aerobic), this is simple speculation, without any real base.
Can somebody suppose that Rudisha, Konchellah, Juantorena, Fiasconaro, Susanj, Courtney can use the same training of Coe, Cram, Snell, Cruz ? Or, for women (doping apart), Kratochvilova (47.99 in 400) and Olyzarenko or Kazankina ?

We must remember that, FOR EVERY DISTANCE, we have two typologies of runners : the FAST, and the RESISTENT.

If we want to train Konchellah, Fiasconaro or Rudisha with the system of Lydiard, we can only produce a runner of medium level, BECAUSE WE DON'T EXALT THEIR MAIN QUALITIES.

In the modern methodology, we can't spend a lot of time for filling in the gaps every athlete has in some direction. Instead, WE NEED TO EXALT THE QUALITIES THEY HAVE.

Many coaches speak about the BALANCE between the qualities. In my opinion, this is the best way for NOT producing the best results every athlete can reach. Top champions can have a lot of gaps in some direction, BUT ARE OUT OF THE GROUP ABOUT THEIR TOP SPECIFIC QUALITIES.

So, the first step is not to have a "common" methodological system, thinking it can work with everybody. The first step is to UNDERSTAND the main qualities of the athletes, to ANALYSE them and to find the best methodology for each one.

The great coach is like a great taylor. Of course, he has in his mind the "model" of the cloth : but, before making the cloth, he needs to measure the client, and to arrange on his body the best solution. Instead, starting from the system, we have the same behavior of a taylor making a good cloth, but after is the buyer that has to work for adapting the cloth to his body.

In this way, we make confusion between "cause" and "effect", because we don't consider the preliminary remarks are different.

So, to discuss about Lydiard system for all middle distances (and especially for 800m) is a phylosophical discussion without any practical base. Different is to discuss the best training system for a determinate athlete, and this is possible only AFTER analysing the characteristic qualities of each one.

One thing is clear :

1) There are not competitions of RESISTANCE or ENDURANCE : in every event, the winner is the FASTEST as average.

2) There is not (in our events) TRAINING OF SPEED : the main point is to train in order to EXTEND the basic speed every athlete has.

I want to give an example not connected with endurance events, but for that reason very significative, speaking about Ben Johnson. The fact he used doping, under this point of view, is not important.

We know the PB of Ben while 18 (10.80) and while 28 (9.79 in Seoul). We know also his PB in 50m in both the seasons (5.64 in 1978, 5.50 in 1988).

Supposing to put these two athletes in the same race, we can see that, after 50m, the difference was about 1.5 meter (3%). But, at the end, the difference is 11m. This means that in 10 years of training for increasing muscular strength and all the qualities connected with the different expressions of strength, HE IMPROVED OF 3% HIS BASIC POWER, AND OF (11m - 1.5m = 9.5m in 50m) 19% HIS SPECIFIC SPEED ENDURANCE.

So, for me it's clear that the key for every runner is to improve in his SPECIFIC SPEED ENDURANCE.

The problem is : HOW.

The methodological discussion is open.

This is from the Renato Canova post in the thread "Re: DISCUSSION Does anaerobic training destroys aerobic talent?" [yes, the thread said "destroys" not "destroy"]

Note the differences in training between the fast 800 guy (example Billy Konchellah) and the resistant 800 guy (example Steve Cram)that are given. Also note that even Geb did 60 meter repeats real fast.

What does mean Anaerobic Training ? If you think that every type of training over the Threshold is the same, you make a big mistake. We have different goals for different anaerobic training :

a) SPEED (duration till 15.0) : of sure is anaerobic, but (for example in very short sprint climbing) the quantity of lactate that you produce is very little, so you can recover in very short time. This is a type of training that doesn't have any bad influence on Aerobic training, on the contrary, if you use many short repetitions with very short recovery (1:00 / 1:30) (for ex., 6 x 60m at 98% of your max speed) can help your fast fibres in working in oxydative way. This is a good way for training Fast Fibers for increasing their Aerobic ability. For ex., Gebrselassie used this type of training very frequently.

b) SPEED (duration till 40.0 / 45.0) : In a single test, you have the expression of your max LACTIC POWER if you run a competition. If you use to run at 90% of your max speed, you produce a good quantity of lactate, but you can recovery completely (under your Threshold) in a time lasting from 4 to 8 min, depending on your attitude and vyour training. For example, if you are an athlete able running 800m in 2:00 and 400m in 54.0, your best in 300m can be about 38.5 / 39.0. In this case, to reduce your speed of 10% it means (I repeat, this is not mathematics, but is an easy way for giving the percentages in athletics) 39.0 + 3.9 = 43.0 about. In this case, you run faster than your speed of 800m, but you don't have a very big accumulation of lactate. Your recovery time depends on 2 factors : your AEROBIC POWER (or your Threshold level) and your ability in

lactate tolerance. In this case, a right combination between Aerobic training at high intensity (from 95 to 105% of your Threshold, running a little bit faster than your Threshold is necessary for improving your Aerobic Power)and Anaerobic Training at low intensity is the key for increasing your lactate tolerance.

c) SPEED (duration from 40.0 /45.0, like before) : If you run at 98% of your max (in the previous case, 39.0 + 0.8, about 40.0), your production of lactate is higher, and the accumulation in your fibres too. The final goal is different : you run for improving your ability in PRODUCING LACTATE (Anaerobic CAPACITY). This is a dangerous type of training, if there is not support enough from the Aerobic System.

So, the stair that you have to use is this one :

a) ALACTIC SPEED (goal : to increase your Nervous ability, your Rapidity, your Technique) : Lasting no longer than 10.0 - Execution at max intensity, using hills better than flat courses.

b) SHORT SPEED ENDURANCE, with repetitions at 95/98% of max intensity, lasting no longer than 10.0 and short recovery (ex : 6 x 60m rec.1:00) (goal : to increase the oxydative ability of your fast fibres)

c) SPEED (lasting till 20/25.0) having the goal to increase your ability in max speed under the point of view of Nervous Cohordination and Nervous Endurance, using single test with very long recovery (sometime good also for distance runners)

d) SPEED ENDURANCE (repetitions at 90/95% on distance till 150m for 800m runners, 400m for 10k runners) with short (but not VERY SHORT) recovery (for ex., 3/4 min) having the goal to increase your Anaerobic Capacity at high speed). The system for evolving this training is TO USE THE SAME SPEEDS and THE SAME VOLUME, trying to reduce your recovery times, in order to improve your lactate tolerance

e) TRAINING FOR ANAEROBIC POWER (is your ability in running faster possible distances from 300m to 600m, depending on your event). You must run at max intensity, this is a training but also a test, and the competition is a training too. Your goal are to become able to produce more lactate (for example, if you run 300m in 38.0 with 12mmol, the most important limiting factor is that youe engine doesn't have POWER enough. So you must become able to produce 15mmol, and when you are able, you can run in 36.5). If you are a sprinter, 300m is the longer distance that you can use for this goal. If you are a distance runner, 500-600m are better.
In this case, you can investigate your specific attitude in becoming a longer runner, controlling the correlation coefficient between your PB in 300 and 600m. If you have a young runner, you can, for ex, finding two different types of athletes (when are not still prepared) :

a) The boy (15y. old) runs 42 and 1:30 (600),so 14.0 for each 100m in 300 and 15.0 in 600. The correlation is 93,33%. THIS GUY HAS HIGH PERCENTAGE OF SLOW FIBRES AND FAST of II Type, so his attitude is TO HAVE A GOOD TOLERANCE TO HIS LACTATE. In this case, the main type of his training must be, in the future, around his speed of 800m, and he can look for 1500m in 3-4 years. This athlete must not use too much absolute speed regarding ANAEROBIC CAPACITY, but sometimes max. speed for increasing his ANAEROBIC POWER. His training is for increasing ANAEROBIC RESISTANCE, strictly connected with the Threshold Levels.

b)The boy runs 39 and 1:36, 13.0 against 16.0. The correlation is 81,2%. This guy has high percentage of Fast Fibres and low percentage of slow. This guy is not strong under Aerobic point of view. He must use more high speed, less volume, long recovery. He can increase his TOLERANCE using high percentage of speed but not very much volume.

An example : CRAM ran 1:42.88 without being very fast, but was able running 10 x 300m between 39 and 40, with very short recovery (from 30.0 to 45.0). This is a LACTIC WORKOUT that is possible only for athletes having a VERY HIGH TOLERANCE, very strong under the Aerobic Power.

KONCHELLAH ran his first 400m, when was 18years old, in 45.1, SO WAS A SPRINTER. He was able running 2 times 300m in 33.0 with 10 min interval. His training for increasing HIS SPECIFIC ENDURANCE was to run 4 times in 35.0 reducing his recovery to 6 min. For him, this training was ENDURANCE, and he never could try to run 10 x 300 in 43.0 with only 30.0 recovery. His attitude was completely different.

So, SPEED in connected with the percentage of your max speed, but, longer is the distance, bigger is the

quantity of lactate that you can accumulate in your fibres. What is really dangerous is to accumulate too much lactate, without having the ability to remove in short time.

ANAEROBIC POWER : your ability in using for short time your engine at max no. of revolutions (single test, and you have to reach the higher lactate level possible)

ANAEROBIC CAPACITY : your ability in PRODUCING a high quantity of lactate. System for training this ability is to run not many repetitions (may be 3-4 times) at 95% of max intensity, with medium recovery time (4/6 min). This is connected with your Anaerobic Power.

ANAEROBIC RESISTANCE : your ability in TOLERANCE of your lactate. Systen for training this ability is to run many repetitions (may be 10-15 times) at a level from 100 to 105% of your AnThreshold, with short recovery (may be 1:00 / 2:00). This is connected with your AEROBIC POWER.

AEROBIC POWER : your ability in removing very quickly the lactate that can produce, running fast. A combined training in the area An Resistance / Aerobic Power can help you in growing your Threshold. You can uselong fast continuous run from 20 to 40min, depending on your event, and long intervals (from 1000m to 3000m) at speed a little faster than your Threshold with very short recovery

AEROBIC ENDURANCE : your ability in staying long time at the level of your Threshold. For specialists of HM, the full time of HM is a mark of their AE. For increasing this ability, the only way is to run FAST long time.

AEROBIC RESISTANCE : Is all the long run at low intensity. This training has only a GENERAL mean. The speed that you use for developing this ability, in 2-3 years must become the same that you use, at your beginning, for developing Aerobic Endurance, so every speed moves higher.

In too many cases you mix up SPEED and LENGTH, thinking that if you go for 200m is speed. Speed depends on your speed, not on the distance. 200m slow are 200m slow, nothing to do with Anaerobic Workout.

RE: Shaheen parts company with Renato conova *12/1/2008 11:22AM* - in reply to Mr. Ray	Reply | Return to Index Report Post

When I speak about "efficiency", I don't want to use a word having physiological or biomechanical means, but only to say that the situation of the body was completely ok.
When you come from a long injury and from a surgery, and, after several months of "physical" training, using a lot of exercises for rebuilding your balance in the body, your ability in coordination, your strength, your reactivity, we can say that you were able to recover a full "efficiency". A high jumper able to jump 2.30, of course in in full efficiency (biomechanic), but is not trained for running 5000m (bioenergetic). It's true that without "efficiency" you cannot be a good athlete in long distances too, but without training of endurance you cannot use the efficiency of your body in that direction.
Don't forget that an athlete can easy appreciate
"directly" his mechanical situation (efficiency),that is an expression "outside" his body, but is very much more difficult to understand his enzymatic and bioenergetic shape, that is hidden "inside" his body.
Particularly for African runners, the idea of "shape" is connected with the mechanical situation, that I call
"efficiency", not depending on the distance they go to run. So, if a marathon runner is able to run very well 20 x 200m with 200m recovery, he supposes to be in shape.
There is not a "shape", but a "specific shape", and of sure, if you are in shape for your best in 800m, you cannot be in shape for your best in Marathon.
Remember always the most important principle of training : for going in shape, you need NOT to

replace some type of training with something else, but to ADD something that before you didn't do, maintaining the level you reached in all the other training. So, if you have the same endurance, but more strength and/or reactivity, you run faster. But, if you have a lot of speed, good strength and reactivity, but your endurance is 50% of your best, forget you can be in shape for middle distances. An example : before winning WCh 2005, one week after winning Golden Gala in Rome in July in 7'56", Shaheen ran 37 km in Iten in 2 hr 02'. In July 2008, he was not able running 10 km at the same speed. So, the problem was not speed, but endurance.

Excuse me, but reading what many runners think about long run is, for me, very funny.
One question : if you want to run a Marathon at 3:19 pace (about 2:20 final time), do you think that running 30k at 4:00 pace can have some connection ?
If you want running 10000m in 30:00, do you think that the main workouts are 400m on track, and long run must be only easy regeneration ?
The first man changing this old mentality was one Australian, Ron Clarke, that in 1964-68 was the first athlete running (not every day, of course, but once every week) for 15-20km very close 3:00 per km. He was able to destroy the World Record of 10000m moving, completely alone, from 28:15 to 27:39 without any rabbit.
If you want to beat your PB, you must run LONG and FAST. Running fast intervals and slow long run is not enough. Running always fast lon run and never fast intervals is not enough. Training is a combination of different speeds, and, more slow is the speed, longer is the duration. If we want to see what really happens in our body, we can see that, for very little difference of speed (for example, from 3:00 per km to 3:10 per km) the level of lactate is very different. The type of work has different targets, the time that you use for building the same enzymatic situation is different, the quantity of fibres interested in our run is different. Running at 3:00 or at 3:20 or at 3:40 are different type of training. So, we must put, in our training, ALL these speeds. I give you an example, for an athlete having a PB of 15:00 in 5000m :

100% of speed = 3:00 per km (this speed is good for some interval till 2000m, using a general volume of 8-10 km like 1000 / 2000 / 1000 / 2000 / 1000 / 2000 with 3:00 recovery, in 3:00 / 6:00, for example). The goal is to increase the ability in removing lactate from muscular fibres. This training has a direct influence in raising the Anaerbic Threshold.

105% of speed (3:00 less 9.0 = 2:51) is SPECIFIC SPEED ENDURANCE. The goal is to increase the ability in accumulating lactate. We can develop a global volume of 5 km, using intervals between 500m and 1km (2 x 1000 in 2:50, rec. 3:00, plus 6 x 500 in 1:25 rec. 1:00, for example)

110% of speed (3:00 less 18.0 = 2:42) is HIGH SPEED ENDURANCE. The goal is to increase the ability in producing lactate. We can use this speed for a global volume of 3000 / 3500m, using intervals from 400m to 600m, example 400 / 600 / 400 / 600 / 400 / 600 / 400 in 64.0 / 1:36 with 1:30 of recovery.

Speed faster than 110 % (for example, 200m in 27.0, 400m under 60.0, 1000m under 2:40) : have a MECHANICAL goal, and/or can work for increasing the LACTIC POWER. We can use only few repetitions with very long recovery.

When we go slower than the pace of the race, we can have the following situations :

95% (3:09 per km) : the goal is to increase AEROBIC POWER. We can use long intervals (for ex, 3 x 3000 in 9:27 + 1000m fast at the end, with 3:00 recovery) for a global volume of 10-15 km, but also LONG CONTINUE RUN for 6-7 km in 18:54 / 22:03. The ability in EXTENDING this speed

can give a better base for the workouts FASTER than the 100% speed, helping in raising your Threshold.

90% (3:18 per km) : the goal is to increase the support for the AEROBIC POWER. You use this ONLY with continue run, starting from 10km for looking for extending your endurance till 20km. Running 10k in training in 33:00 for an athlete of 15:00 in 5km is very easy, but he cannot run in short time in 31:00 if doesn't become able to extend his long run till 20k in 66:00.

85% (3:27 per km) : the goal is to increase AEROBIC ENDURANCE, that is connected, more or less, with the AEROBIC THRESHOLD. You can start with 15-18 km, for going till 30km. THIS HAS NOTHING TO DO WITH MARATHON.

In another thread, I explained that Shaheen runs, once per month, a long FAST RUN of 37-39 km at 3:15 - 3:10 pace at 2300m of altitude, also in full season. In training, nothing is negative. THE ONLY QUALITY THAT YOU LOSE IS THAT ONE YOU DON'T TRAIN. So, you don't lose speed if you go for long run, but if you don't go for speed. At the same time, you don't lose endurance because you train your speed, but because you don't go for fast long run.

The development of training is not to replace some type of workouts with some other, but to ADD something that you didn't use before. Training is the ability in stimulating your body in different directions. So, one stimula can be with more intensity, another with more duration at the same speed. We have to mix everything together, respecting a correct proportion between the different workouts.

Regarding long run and speed, I want to give you an example : Paula Radcliffe tried, for many years, to become faster in the last lap, working on her speed. In 5 or 6 years, she moved her PB in 3000m from 8:31 to 8:28, practically always the same situation. When finally, tired to be no. 4 in every race, she decided to move to full marathon, her first race after winning her first marathon in London in 2:18, less than 2 months later, was a 3000m. Final results : 8:22, improving her best of 6.0 !
Personally, I had a similar situation in 2000m, with my Italian athlete Maura Viceconte. We worked very hard for beating the Italian Record in Marathon. She ran, winning, Vienna in 2:23:47 (NR) in May. After this, she was able to increase her PB in 5000m from 15:45 to 15:18, and to beat the NR of 10000m running 31:05.54, improving her PB of 1 min from the past.

At the end of every discussion, the question is :
What I ask to my training ? I want to try to reach my best potential results, or I want to be fresh every day, running only for my health and my fun ? In the first case you must use long and fast run, with a correct modulation. In the second case, run slowly and enjoy your life, but don't speak about good results in athletics.

You have to answer to this question : do you think more possible running a marathon preparing 5000m with a lot of training of speed but without long and fast run, or running a 5000m preparing Marathon with long and fast run, including some specific workout of speed ?

And also : which type of speed you need for running, for example, a 5000m in 13' (2'36" per km = 62"4 every 400m) ?

If you are able running in training 10 times 400m in 56" with 2'/3' of recovery in between, the next goal in order running a fast 5000m is running 10 times in 55", or it's better running 10 times in 56"

reducing recovery to 1' (in this way, increasing the ability in running with high saturation of lactate in your muscles), or also 15 times in 56" with the same recovery of 2' / 3' ?

In other words, is it better to continue to push for increasing speed, or, when you are comfortable with a speed faster of 5% than the specific speed of the race (in the above case, 62"4 less 3"1 = 59"3), to try to EXTEND THE SPECIFIC ENDURANCE AT THAT SPEED, increasing the volume of training at a speed between 90% and 105% of the specific speed (in this case, per km, between 2'51" and 2'28", obviously using distances in training till 8-10 km at 90%, and distances of 400-800m at 105% ?

The final goal, for every distance, is not TO INCREASE THE SPEED, but TO EXTEND THE ABILITY TO LAST AT THE SPEED OF THE COMPETITION.

In this way, you increase the special volume, and this provokes a decrease of the level of lactate at the same speed. Consequentely, WHEN YOU WANT TO RUN A SHORT DISTANCE AT THE SAME PERSONAL INTERNAL LOAD, YOU CAN RUN FASTER (so, the first effect of an increase in specific volume is to enhance the speed).

You make confusion between MECHANICAL ENGINE (we have to work for bettering muscular strength, reactivity and elasticity, but this has nothing to do with BIOENERGETICAL FACTORS, that are the real limit in every competition of endurance) and METABOLIC ENGINE. For all the activity of endurance, the cake are workouts having a Metabolic goal, the sherry on the cake workouts having a Mechanical goal.









8hunr,

you need to build the tools so you can do that work. Look at the top 800m runners Coe (I know i'll get shitted on for this), Bungei, Bucher, Cram all 1:42 or better and all would tran over 140km/wk in base. And guys like Wilson K., as you'll see if the following posts, have huge aerobic bases off of which to do their work -- the same cannot be said of American runners.

FROM RENATO:

1. Does continual anaerobic track work break down the aerobic capacities of your athletes?

Yes, of sure. But in their training during the competition season, after 3 races in short time, normally they use a period of 2-3 weeks for recharging the aerobic system. For lasting a full season at top level, we need think that RACES ARE THE INTENSITY, and the type of training is of volume, for balancing this intensity. Of course, it's possible to train aerobic power not only running long time (during the period of competitions they

rarely run 1 hs easy, more frequently 40-45 min a day with technical exercises : this is one of two daily sessions), but expecially using intervals not fast (for ex., 10 x 500m in 1'15" with 1 min recovery, or 2 x 1000 + 2 x 800 + 2 x 600 + 2 x 400 + 2 x 200, rec, 2 min between tests and 5 min between couples, the first one not fast (2'45" - 2'10" - 1'33" - 58" - 26"), the second fast at 90 % of your possibility (2'30" - 1'57" - 1'23" - 52" - 23"). This is a mixed work of volume, that has a base of aerobic, and a development in lactacid.

2. What kind of lifetime and current mileage levels are your 800m runners at?

kenyans ran for long time (may be 10 years about) from 10 to 20 km per day in natural way, but this one also is training. Training is not only the OFFICIAL WORK, but every activity that can modify your body and your mind. So, they have of sure an anaerobic threshold very higher than the threshold of European or American runners. So, also if they now don't run many km, it doesn't mean that are not prepared, because aerobic activity was the most important training when were very young.

...I never did a count about their total mileage. I know very well their weekly mileage, that is about 140 km per week during the preparation period, no more than 100 during competition season. In my count, I consider everything (for ex., km. of warm-up and of regeneration), that are the higher percentage of the mileage (about 60 %). Is not the same running slowly or not running, like many coaches think. A bigger quantity of slow run can help your body in recovering and transforming your lactacid work in performance, maintaining a correct balancement between aerobic and anaerobic system. NEVER YOUR AEROBIC LEVEL MUST DECREASE, if you want to improve !

3. Would you train a Kenyan 800m runner and an American/Western 800m differently?

Of course, training must be different. In an African, you can think that the basic, natural work of running is already enough, and you have to qualify this, not to build. For a western young athlete (may be also european), you must use more massive run in aerobic way in order to build a base that they don't have yet. In any case, today is a mistake to prolong for too long time the aerobic work in exclusive way : we must to improve at the same time in every side of your qualities (aerobic, lactacid, strenght, ability, rapidity). You must use long run for building the aerobic base, but also very intense exercises for improving your nervous capacity and specific exercises for improving sytrenght. Every 2-3 months, you must leave the basic work, going to specific (for ex., lactacid tests), for a short period (may be one month), and after you come back to the system of before. THIS IS MODULATION !

about 800m runners/training:

About 800m, of course a top runner must run 400m in 46.0 or less. Wilfred Bungei, that never was very fast, 10 days before winning Bruxelles with 1:42.52 ran in Davos, in a training-test, 45.07 hand timed, and also Yiampoy is able running under 46.0. About Joseph Mutua, I personally clocked him in 43.9 during last stage of relay last year in World Military Championships. But, regarding long distance runners, the situation is completely different.

...

One of the problems when we are speaking about different distances is that you can obtain the same performance having very different attitudes. For example, if you accept the idea that 800m can be an event having from 40 to 70 % of lactic involvement, you can have at the top athletes like Juantorena or Konchellah or Fiasconaro, coming from 400m, or like Coe, Cram, Bucher, coming from more long distances. For ex., speaking about Bucher, he was a former runner in World Cross Country Championships when was junior, and began his activity running 10000m. In 2001, I personally saw him in St. Moritz (1800m of altitude) running one day 3 times 200m in 21.5 / 21.7 / 21.6 with 8 min recovery, and the day after a 10000m on track in 30:18. So, it's very difficult, if not impossible, to compare different athletes following a table like that one

...

Steve Cram, able running under 3:30, had a personal best of 1:42.88 on 800m also if never was able running under 48.5 in 400m (and 47.5 in relay in his best season).

There you have it. This is THE guy we always talk about. The guy who coaches the runners we follow. 1:42 800m runners to 26:30 10ks to 2:07 marathons.

Joe, you explained what every runner has to understand :

a) DOESN'T EXIST ANY TYPE OF TRAINING LIMITING QUALITIES.
You lose some quality, or are not able to increase it, ONLY WHEN YOU DON'T TRAIN THAT QUALITY. It means that you lose speed not because you run long distance, BUT BECAUSE YOU DON'T TRAIN SPEED. At the same time, you become less resistant not because you do speed workouts, BUT BECAUSE YOU FORGET ENDURANCE.

b) The elements of training are always present in a good training-schedule. What must change is their percentage and their frequency. So, during the FUNDAMENTAL PERIOD you must work for increasing your qualities : general resistance, strenght, rapidity, flexibility, cohordination. You must not use SPEED, but you have to prepare your speed. For example, you use circuit with weights or special works uphill, having clear in your mind what the goal is. If I go climbing 400m, making, without interruption, 60m sprint at max. speed + 40m bounding + 60m sprint + 40m skipping + 60m sprint + 40m heels to buttocks very fast + 100m sprint, and at the top 10 times squat-jumps pushing harder is possible, I use a work for increasing strenght endurance, reaching a very high level of lactate, improving "stamina". THIS IS A BASIC TRAINING, but is of very high intensity. When I put speed in my training (f.e., 15x100m with 30/40 sec of recovery), I have more BASIC QUALITIES for improving this specificism.
About running, every speed slower than 80% of the speed of the race is NOT SPECIFIC. So, about 800m training, if we want to refer to 100m speed, these are the parameters :

PURE SPEED (over 110 %)
SPECIFIC SPEED (110 - 90 %)
SPECIAL SPEED (90 - 80 %)
BASIC SPEED (80 - 65 %)
GENERAL SPEED (65 - 50 %)
REGENERATION (under 50 %)

For an athlete able running 1:44 (13.0 every 100m), it means :
Faster then 11.7 = SPEED
11.7 >< 14.3 = SPECIFIC SPEED
14.3 >< 16.3 = SPECIAL SPEED
16.3 >< 20.0 = BASIC SPEED
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Slower than 26.0 = REGENERATION

Of course, for evey speed we can use different distances :
SPEED : 60-200m (global volume 1500/2000m)
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REGENERATION : What you feel better for you.

This fact can happen along all the season. We must modulate speed, lenght of intervals, global volume, duration of recovery, that can change according to different period of preparation.
One good principle is that MORE QUALITY THERE IS (f.e., 3-4 competitions very close), MORE REGENERATION WE NEED.
You must learn running very slow for running very fast.

The system for increasing SPECIFIC ENDURANCE is not only to increase the speed, but essentially to reduce recovery. So, we can adapt the membranes of our cells to increase their permeability, in order to eliminate lactate in shorter time.

I want to remember a type of work of Juantorena, that really never ran many km :

3 times 1200m with 6x150 in 18.5 recovery 50m in 13.0, with final time of 3:09 about (6 min recovery).
This one was a typical example of Anaerobic Work, that was good for increasing Aerobic Capacity, and not speed.
After this type of work, Juantorena was able to improve also in 400m, without never using speed so high like in the past (when he was only a 400m runner).

I'm not the coach of Longo, that is called Fabio Scapin. But, as I was responsable of Italian Federation for Methodolgical Research and Experimentation, I know very well what Longo used in his training, beeing connected with all the Italian coaches for discussing training programs and analyzing results of training.
I want also to explain my idea about speed. What is possible to do with 52-53 on 400m ? Of sure, is possible running till about 1:50, depending on personal specific endurance. See the situation of women (and the fact that many used not permitted substances many years ago doesn't change the situation) : in the top position we can find Kratochvilova (1:53.28 and 47.99), Olizarenko (1:53.43 and 52.4, but also 3:56.8), Quirot (1:54.44 and 49.61), Mineyeva (1:54.81 and 51.8), Kazankina (1:54.94 and 53.4, but also 3:52.47 and 8:22.62, and 5th position in 15 km road WCH '87 at 36 years of age), Melinte (1:55.05 and 53.8, but also 3:56.7), Mutola (1:55.19 and 51.53, but also 4:01). Italian record holder Gabriella Dorio, winner in OG '84 in 1500m, has the Italian record with 1:57.66, with a PB of 54.9 on 400.
So, you can understand that, if an athlete like Kemboi (not able running under 50) goes to 800m, of sure can run 1:48 or something less. About Cram, 49.7 is not his PB, but is 48.5, and in any case he never was able running faster than 47.5 in relay.
But not always a big endurance is important for running 800m. We can have athletes very fast in short distances (for ex., 100m in 11.2) and very resistant in long, slow run (able running a marathon in 2:20), that always lose competitions of 800-1500m against athletes less fast (12.0) and less resistant (not longer than 10k in 31:00). So, the difference between the two athletes is their SPECIFIC ENDURANCE. Specific endurance is the percentage of speed that you can use in relation to your max. speed.
If you run 12.0 in 100m, and 52.0 in 400m, your specific endurance (for 400m) is : 12 (100 %) : 13 (pace of 400) = 92,3 %. So, if you run 52.0 (13.0) and 1:52 (14.0), your specific endurance (related to 400m) is 92,9 %.
In relation to the distances 400/800, athletes having a coefficient between 95 and 90 % can be considered "resistant", under 90 % "fast" if are really fast, in other case simply weak....
If you have 95% of coefficient, if you run 52.0, you can run under 1:50. Of course, is something possible to strong athletes of long distances.
If you have 90%, if you run 48 you can run 1:45.2 (and there are many specialists in top lists having this typology).
If you are a long sprinter, having 85% of coefficient, running 46 you run only 1:45.8.
So, your absolute speed is not so important. You must individuate which is the quality that you can increase more. It's a nonsense to spend the most part of your time in training for improve a quality of 1%, forgetting the direction where you can improve of 10%.
At the end, I want to reply to hunh.
I'm really tired to find on this site very stupid persons, frustrated idiots, speaking and running down, slanderers of very poor level that think to know every think and talks about situations that never could test before.
One thing is to have an opinion, that can be right or wrong, but is only an opinion. If you are intelligent, when someone can explain you what you didn't know, you can change opinion, knowing facts.
Another thing is to be unshakable about total stupidities, that have nothing to share with real facts, and that you think because BEFORE KNOWING THE TRUTH you already have your idea. You are an idiot, and like you all people talking about drug without knowing anything.

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When I begin to train a Kenyan athlete, of sure, if he's talented, he's already able running 400m in 53/54 sec, while is yet 16 years old. We have many Kenyans not able running fast among Marathon runners. Many of them, able running 2:07 - 2:10, are not able running under 55 secs in 400m. But you have to think that your max. speed is not connected with your FINAL SPEED. An example, not from a Kenyan. In the past, Italian Alberto Cova was considered unbeatleble in final lap, winning European Ch. '82, World Ch. '83, Olympic Games '84 and Europe Cup '85 (5000 and 10000) with his terrible final kick. In Helsinki '83, he finished with 53.2 last lap. I and his coach Giorgio Rondelli were curious to see his real speed, so, two weeks after WCH, he ran for fun 400m during a local meeting. HE RAN 52.8, almost the same time of his last lap !
So, for example, I'm sure that Stephen Cherono and Nicholas Kemboi are not able running under 50.0, and I think that also Gebre and Bekele are not able running under 50.0. The final sprint in 10000 and also 5000m IS A SPRINT OF AEROBIC RUNNERS, not a sprint OF FAST RUNNERS. If you are an athlete able running 3000m in 8'30" (so, not very good) and you run a 3000m in 10' with Maurice Greene, and then you go for a full final lap free, YOU WIN, NOT MAURICE GREENE. So, the real problem is YOUR ANAEROBIC THRESHOLD LEVEL. The best African runners have a AnT of about 23km per hour, so they are able running under 2'45" per km in Steady-State. It means that, when they run in 28', THEY DON'T USE THEIR ANAEROBIC ENGIN, so when they decide to sprint THEIR SITUATION IS THE SAME OF BEFORE RUNNING.
Different problem is to develop their strenght and muscular power. So, we work very much in that direction, using special Circuits uphill (lasting from 1:30 to 6 min), and expecially we use very much work of short sprints climbing, lasting from 10 to 20 secs (depending on the gradient), for developing SPECIFIC STRENGHT and RECRUITING THE MOST PART OF FIBRES, what normally long runners are not able to do.
So, I can say that 30 % of mileage is for regenerating (very slow, for making the lactate lower), 30 % is for building base (long run at moderate-medium pace), 20-25 % is around the Race Pace, with the goal of improving endurance (so is not important running faster, but running longer : if you go for 20 x 400m with 1 min recovery, your development is 20 x 500m then 20 x 600m or 20 x 400m with only more 30 secs of recovery, at the same speed), 5-10 % is for developing speed (all faster of 10% in relation of race pace is speed), and 5% is for strenght endurance.
RUNNING MIDDLE DISTANCE IS A MATTER OF SPECIFIC ENDURANCE, NOT OF SPEED, but we must understand what endurance means. Very long and slow run is not endurance, is general resistance, good for a beginner, not for a top runner. In every event, final goal is RUNNING LONGER AND FASTER, not only longer and slow, or short and faster.

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I can answer to the two last posters together. The division in 3 periods (fundamental, general and specific) is something that is part of the modern methodology for every event. What can change is the duration of every period. For example, if we want to have a double periodization (indoor and outdoor), we can use only 2 weeks in April, after World Indoor, as Fundamental period (that in this case has the goal of recovering mental and physical energies, without resting but maintaining a good level of efficiency), going soon to the General Period, lasting about 6 weeks. In this way, the athlete is already ready for starting his Specific Period before half of June, having the main goal at the end of August. So, in this case, we have period of 2 weeks (Fundamental) + 6 weeks (General) + 10 weeks (Specific). It's clear that it's not possible to maintain the top shape for 10 weeks, so, during the Specific Period, we must create some short period with general elements at higher intensity. An example : if during winter is normal, for Shaheen, running once a week for 25 km and, once a month, for 35 km or longer at 3:20 pace, during the specific period he goes only once every 2-3 weeks, but the pace is faster (from 3:10 to 3:00). In any case, 35 km cannot be considered something SPECIFIC for a steeple runner, but something GENERAL. But, if the GENERAL becomes qualified in intensity, it becomes a very good support for the specific event. In this case, his long run is no more GENERAL, but SPECIAL. The difference between Special and Specific is that a Specific training is DIRECTLY connected with the performance, a Special training is DIRECTLY connected with the SPECIFIC TRAINING. In other words, if I use fast intervals I train for improving my performance (Specific training), if I use long fast run I train for becoming stronger in my specific training (Special training), if I use long run at

moderate speed I train for increasing the base that makes me able to run long and fast (General training). From this is clear that THE MODULATION IS THE KEY FOR GROWING AS IN QUALITY AS IN QUANTITY, the athlete becoming able to improve in intensity but also in endurance. This is the real secret for becoming stronger : TO INCREASE THE SPEED ENDURANCE or SPECIFIC ENDURANCE, that is the ability of prolonging the personal resistance at an identified speed.
So, for Rift Runner, the answer is : approaching every event, YOU MUST BE ABLE TO RUN AT THE SPEED OF THE COMPETITION, creating a correct link between speed and recovery. This means that, if you want to run a Marathon at 3:12 pace, YOU MUST RUN YOUR SPECIFIC TESTS (for example, 4 x 5000) AT A SPEED NOT SLOWER THAN MARATHON SPEED, and this is the rule for every kind of athlete having the same goal. So, the SPECIFIC PART OF TRAINING is the same. But, as every athlete is different from another, what can change is RECOVERY : for one athlete 2 days after hard training are enough, for another are better 4 days of General training. So my advice is TO REDUCE VOLUME AND INTENSITY during the 2 previous days before specific training, and to recover well during the 2 following days, using big modulation, in order to preserve the ability of a GOOD QUALITY OF EXTENSION during the Specific Workout.



I came back from some marathon where my athletes ran (I had Selina Kosgei in Paris, Frederick Cherono and others in Turin, Rodgers Rop and Makori in Boston, Benjamin Kiprotich winning Padua in 2:10:43 in his debut, Florence Barsosio coming back after having a baby winning Madrid in 2:34:10, and a lot of runners for shorter distances). They had different fortunes, somebody was very good, some other (like Rodgers Rop in Boston) had big problems due to the weather, completely different from the situation in training in Italy (cold and rainy).
Only now I opened my computer, going to the posts of letsrun. So, I want to be more precise about the training of Stephen Cherono.
In my schedules (what I send by e-mail to some coach that provided to post them later), when you see a training type "5 x 600m in 1:33", this is the PROGRAM THAT I GAVE TO THE ATHLETE. If you see "5 x 600 in 1:31.8 - 1:32.2 - 1:29.5 etc", very precise, THIS IS WHAT THE ATHLETE REALLY DID. So, regarding for example the lack of Stockholm before Zurich, what is posted at the beginning of this post is the PROJECT OF TRAINING. Later, we decided together that could be good to run one more race, and we changed the program, depending on the best choices for reaching the best shape for World Championships.
I wanted to send the real training, but I had it in my computer that a thief pinched me in Nairobi, so now I have to rebuild every thing from my training diary, and I can do it only when I have more time.
Regarding the consideration that the training of Stephen is designed for him, ALL TRAININGS OF TOP RUNNERS MUST BE DESIGNED FOR THEM. Don't think that, following the training of a champion, another athlete can improve very much. This happens also if the other runner is a champion himself. For example, when I train together Stephen, Nicholas Kemboi, James Kwalia (12:54), Mark Bett (12:55), Albert Chepkurui (26:38), really their work has only a part in common, but there is always an individual part.
Example : all together can go for 3 x 2000m in 5:30 rec. 3 min, then the work can change in this way :
Shaheen - Kwalia - Bett : 6 x 500 in 1:12 rec. 1:30 + 10 x 300 in 43.0 rec. 45 sec.
Kemboi - Hassan - John Korir : 6 x 1000 in 2:42 rec. 2 min + 10 times 100m sprint uphill
Mosop - Paul Kosgei : 2 laps of the lake in St. Moritz (8.7 km) at 3:00 pace
At the end of different workouts, athletes going (for example) to Bruxelles, ran 26:30 (Kemboi), 26:38 (Hassan), 27:13 (Mosop), 27:17 (Korir), 27:21 (Kosgei), while Shaheen ran steeple and Kwalia 7:35 in 3000.
So, training together athletes with some similar characteristic, but of course not identical, we can use a part of work together but with different means. In the case of before (that is not true, but hypothetical), 3 x 2000 are endurance at low level for Shaheen, Kwalia and Bett (2:45 pace, when they have to run at 2:30 pace), are endurance at the level of threshold for Kemboi, Hassan and John Korir, and are speed for Kosgei moving to marathon.
After this, the other part of training regards the specific preparation : for Shaheen, Kwalia and Bett moving to speed, for Kemboi, Hassan and Korir to specific pace, for Kosgei and Mosop to more long endurance.
What is possible to see, trying to follow if you want, is THE PHYLOSOPHY of training : modulation, recovery, intensity, mix of strength endurance and specific endurance, basic training ALWAYS and not only during winter, speed ALWAYS and not only during track season.
With this phylosophy, everybody can find his best program. Remember that not always TRAINING HARD is TRAINING WELL.

If you want to follow a training like what (not only me) we use with top runners with a young runner, you make a big mistake. Remember always the 3 most important points of a good training : CONTINUITY, GRADUALNESS and MODULATION. You must have patience in building the body and the mind of an athlete, doing some hard training only when is possible.
Last thing regarding who tried to use the scheme for circuits that I wrote. Not refuse circuits, but try to adapt them to your current situation. Where I write 200m running go, for example, for 50m, where I put 40m bounding go for 20m only, reduce the length, don't use too high intensity, and START TO PREPARE YOUR BODY FOR BECOMING ABLE TO DO THIS WORK NEXT YEAR. Remember that the most important part of training is TRAINING FOR BEING ABLE TO TRAIN : 80-85% of your training has to have this goal, 15-20% the goal to prepare the competition.



I'm yet in Italy till tomorrow (I leave at 12.00 from Milano). So, I can answer to your question.
I don't think that we must use a big number of specific speed training. I am used to analyze training during a full period, taking from my sensations (regarding ALL TRAINING, not only specific workouts) the idea of the shape of the athlete, and what he needs. For example, if you run 50 miles per week, using like max mileage in one session 10 miles at medium but not very hard pace, and are able to run on track 10 x 1000m in 3:00 recovering 200m in 1:30, may be that you run 10000m in 30:30. Next year, you increase the volume to 80 miles per week, you run a longer run of 15 miles, and run 10 miles a little bit faster, but you go on track using the same speed and recovery of before (10 x 1000m in 3:00). After this, you are able running in 29:30. And still, the SPECIFIC SPEED ENDURANCE TRAINING WAS THE SAME ! What did happen ? That your specific work of quality had the opportunity to be recovered better and to become more stimulating for your physiology.
This is the reason because I NEVER USE TWO TIMES THE SAME TRAINING, also if I use trainings having the same goal.
I want to avoid that the athlete becomes slave on his times and his tests, putting every time in relations his current training with the past training, and drawing a conclusion that is wrong BECAUSE HE DOESN'T ANALYZE THE GLOBAL ASPECT OF TRAINING.
I prefer to work around the speed of the race : a mix of speed and endurance (the first one little faster than the race speed, the second one little slower, but in any case very close the speed of the event) normally can produce best results, preparing some SPECIFIC WORKOUT that I use with attention and thriftiness.
Personally, I don't use more workouts like 10 x 400 in 60.0 recovery 1 min for a specialist of 1500m (that I use instead normally with runners of 5000m). In my personal experience, I remember that was able running 10 x 200m in 27.0 (with the last in 24.9) recovering 1 min, and at that time my personal best in 800m was 1:59.8 ! And Giorgio Gandini, coach of Francesco Panetta, was able running in 1957 in training 30 x 400 in 64 rec. 60m jogging in 40.0, with PB of 3:47 / 14:42 / 31:34 (the Italian National Record for Women is of my athlete Maura Viceconte, 31:05.54, that has 4:26 in 1500m) !
So, clearly, is not this type of work that can produce the best performance. You become specialized in recovering very quickly, but during the race this is not possible. So, is better to try to increase the Threshold and the Speed, going for workouts of Lactic Endurance only few times, at high intensity.

Probably my reply is not fully connected with your question, but I want to try to explain why, training specific endurance, you can improve in your speed. The first question is : what the speed is ? Is your max speed (for example, 11.8 for 100m for Gebre) or is "relative max speed" connected with your event ?
Personally I think that speed is every thing faster of 10% of the event speed. So, if you are a runner of 800m in 1:44, your race speed is 13.0 every 100m. 10% of 13.0 is 1.3, 13.0 - 1.3 = 11.7. When you run in 11.7 you go for SPEED, and the fact that you can run 10.5 or 11.0 is not important, because important is to run at 12.5 speed longer possible. Of course, the same speed has different goals in relation with the distance. 11.7 for 100m is speed, 11.7 x 3 = 35.1 for 300m is speed endurance, 11.7 x 4 = 46.8 for 400m is the BASIC SPEED for the final distance.
For a Marathon runner of 2:06 (3:00 per km), 110% of the speed is 2:42 per km. Of sure Baldini never run faster than 2:42, but about 3:00 he tries to develop his SPECIFIC ENDURANCE. For example, starting with

4 x 5000m in 15:00 rec. 1000m in 3:30, the final workout can be 4 x 5000 always in 15:00, but recovering 1000m in 3:10, eventually adding a final 2000m in 5:45. THIS IS A DEVELOPMENT OF SPECIFIC ENDURANCE.
Now, I want to give an example.
You run 10 times 400m in 60.0, recovering 1 minute, reaching a final level of lactate of 12 mmol.
After a mix of different type of training, 2 months later, you become able to run not 10 times, but 12 times in 60.0, reaching the same level of lactate (12 mmol). Do you think that, when you run 12 times, after 10 times the level of lactate is already 12 mmol ? Of course not, may be about 10. But, if you want to go for ONLY 10 TIMES at a final level of 12 mmol, you can run no more in 60.0, but in 59 or less. SO, TRAINING SPECIFIC ENDURANCE AT A SPEED THAT IS NOT MAXIMAL, YOU CAN IMPROVE YOUR RELATIVE SPEED.
But, if you are able running 1500m (that is a short distance) in 3:43 when you run 10 times in 60.0, you become able running in 3:40 or less when you are able running in 59. AND THIS WITHOUT USING MAX SPEED.
Of course, you must use continuous run at high intensity for 20-30 min, and also short sprints for training your neuromuscolar system (the answer of BONO is very correct).
This is the reason because, in the modern training, long run at low intensity is useless, and max lactic speed also. And this is the reason because I use so much hills of different length at max intensity.

What does it mean "Kenyan 1500m Training" ?
There are different methods, of course depending on the coach.
For example, this is the current program of an athlete (in my group) that I don't want to name, but is in top 5 in the World (starting on 1st November) :

Mon, 1.11
a) 1 hr moderate run (16 km)
b) 30' easy + 12 x 80m sprint uphill

Tue, 2.11
a) 50' easy
b) 20' easy + 5 circuits of strength-endurance (see after)

Wed, 3.11
a) 30' easy + 5 x 6' fast rec. 4' easy
b) 40' easy + gym

Thu, 4.11
a) 1 hr with short variations of speed (30" / 45") after 20'
b) 30' easy + exercises of reactivity : 10 times 30" jumping with blocked knees + 10 times 30m bounding + 4 sets of 3 starts from different position (on the ground)

Fri, 5.11
a) 1 hr moderate
b) 40' easy + gym

Sat, 6.11
a) 30' easy + 8 km fast (about 3'05" / km)
b) 30' easy + stretching

Sun, 7.11
40' easy

Mon, 8.11
a) 1 hr 10' moderate run
b) 30' easy + 12 x 100m sprint uphill (max intensity)

Tue, 9.11

a) 50' easy
b) 20' warm-up + 6 circuits for strength endurance

Wed, 10.11
a) 30' easy + 6 x 5' fast recovery 3' easy
b) 40' easy + gym

Thu, 11.11
a) 1 hr 10' with short variations of speed after 20'
b) 30' easy + exercises of rapidity : 10 x 30" skipping very fast + 10 x 20" heels-to-buttocks very fast + 10 x 50m running very fast in high frequency (very short strides)

Fri, 12.11
a) 1 hr 10' moderate run
b) 40' easy + gym

Sat, 13.11
a) 30' easy + 8 km fast (about 3'02" / km)
b) 30' easy + stretching

Sun, 14.11
40' easy

Mon, 15.11
a) 1 hr 10' moderate run
b) 30' easy + 4 x 120m sprint uphill + 10 x 80m sprint uphill (max intensity)

Tue, 16.11
a) 1 hr easy
b) 20' warm-up + 6 circuits for strength endurance (rec. 6')

Wed, 17.11
a) 30' easy + 6 x 4' fast rec. 3' easy + 3 x 2' fast rec. 2' easy
b) 40' easy + gym

Thu, 18.11
a) 1 hr 10' with short variations of speed
b) 30' easy + exercises of explosivity : 10 sets of 10 squat-jumps + 10 sets of 30 sagittal splits + 10 sets of 5 jumps with knees to the chest

Fri, 19.11
a) 1 hr 10' moderate run
b) 40' easy + gym

Sat, 20.11
a) 30' easy + 8 km fast (under 3' / km)
b) 30' easy + stretching

Sun, 21.11
Rest

For your info :
* Easy run is between 4' and 4'20"/km (6'20" - 6'50" Mile)
* Moderate is between 3'20" and 3'40" (5'20" - 5'55")
* Fast is between 2'50" and 3'10" (4'32" - 5'05")

** Circuit for strength endurance :
60m sprint
40m skipping
60m sprint

40m bounding
60m sprint
40m heels-to-buttocks
100m sprint
10 squat-jumps on the place (recovery 6')

In my training I refuse to have a choice between to EXTEND the distance at the same pace and to INCREASE the intensity in the same distance.

In my experience, these 2 parameters work together.

I don't want to speak about the case of the woman having 15'20", because who wrote about this case was not the real Renato (and this is the reason because the thread was cancelled...), also if his training phylosophy was very similar to mine.

In any case, during winter my main aim is to build ENDURANCE and STRENGTH. For the first, of course I use a lot of long run at different speed :

a) We start with 40' going in one week at 1 hr at comfortable pace (for example, in the case of an athlete running 14' in 5000 or 3'45" in 1500m, a pace of 3'40" per km or 5'53" per mile)

b) After this short introductive period, we move in 2 directions :
1- We extend the distance at the above pace till 1 hr 30' in the next 3 weeks

2- We try to increase the speed of 1 hr using the system of PROGRESSIVE RUN (for example, the last 20' run at 3'20" or 5'20"), extending the fast part of running till when the full hour is at the same fast pace

3- At the same time, we start to put in the program some session for STRENGTH, combining exercises of reactivity, technical exercises and short sprints uphill, carried on at the maximal intensity (otherwise, it's not possible to develop strength).

c) When we are able to do this, we have another period where we develop our training in this way :

1- If the athlete is a specialist of 10000m / HM, his long continuous run at the pace of 5'50" per mile can be extended, once per week, till 2 hr. If is a specialist of 1500 / 5000 or steeple, can remain of 1 hr 30' using some final progression.

2- Once per week, there is a LONG FAST RUN, that in the case of a runner of 10000/HM is between 20 and 25 km, and the athlete try, week after week, to run a little bit faster. In the case of an athlete for steeple / 5000 the distance is between 15 and 25 km, for a specialist of 1500m between 12 and 18 km.

3- These 2 different training are in the program every week, with 3 full days of interval in between (for example, on Monday the longest, on Friday the fastest).

4- In the middle (in this case, on Wednesday) we start to work for SPEED ENDURANCE, alternating FARTLEK (sessions lasting about 1 hour with mixed distances, for example
6' + 1' + 5' + 2' + 4' + 3' + 3' + 4' + 2' + 5' + 1' + 6' fast (42' global fast work) with 2' easy recovery (22') giving a total time of 1 hr 04'), or long intervals on track (for example, 3000 + 2 x 2000 + 5 x 1000 + 6 x 500m, recovery after 3000 and 2000 in 3', after 1000 in 2', after 500 in 1'30")

5- During the other days (Tuesday, Thursday, Saturday) we use long and easy run (never less than 18 km, till 25 km, at comfortable pace) and exercises for STRENGTH, extending there execution in order to increase the STRENGTH ENDURANCE.

d) Only after these periods, when the AEROBIC BASE is consolidated, we start to put the real training of speed.
When we start with this, we cant use a weekly program, but our microcycle lasts 2 weeks, because NEVER WE GO TO REPLACE THE LONG RUN, BUT WE GO TO ADD SPEED TO THE PROGRAM ALREADY USED.

One of the most important points is : NEVER WE HAVE TO LOSE WHAT WE WERE ABLE TO BUILD BEFORE. Training is not to replace, but to ADD.

Old man (but very much younger than me), the principles for your training, like Jason already wrote, can be the following :

At the moment, you must increase volume of training, but at the same time intensity. I already wrote that, during the GENERAL PERIOD (and for you now we are in this period), an athlete must take care about his INTERNAL LOAD. Internal load means the level of effort that you use for making a type of training. THE LEVEL OF TRAINING FOR AN ATHLETE IS NOT WHAT HE'S ABLE TO DO, BUT HOW MUCH EFFORT WHAT HE DOES COSTS HIM. In other words, one thing is THE PROPOSAL of training, another thing the ANSWER. The answer is your training.

You must think about one question : why, when you are not trained, you run, for example, 10 km in 38:00, and after 4 months of training you can run 34:00 ? Which the effect of training is ? Because is not a TECHNICAL effect : you were able running before like after. So, TRAINING HAS TO CHANGE YOUR PHYSIOLOGY. It means that THE SAME EFFORT that you used before for running, for example, 1000m in 3:00, after good training can push you to run 2:50. So, 3:00 and 2:50 after 3 months for your body ARE THE SAME THING.

It's very important to understand this fact, because normally in training there are these types of mistake :

a) Runners want to measure the level of their training looking at the final times. So, they think that running faster is better. Of course running faster is better, BUT ONLY IF YOU CAN USE THE SAME EFFORT, because it means that your shape is growing. BUT, IF YOU TRY TO RUN FASTER BECAUSE YOUR PERCENTAGE OF EFFORT IS HIGHER, you go for more tough work, destroying yourself. THE SHAPE IS SOMETHING COMING NATURALLY WHEN TRAINING IS WELL BALANCED, never you must "search" your shape with too hard workouts.

b) In order to increase your shape, maintaining the same Internal Load, you must at first increase your volume at the same percentage of effort. Intensity grows automatically.

How is possible to control that you can use the same level of effort ? If you don't have any coach, I suggest you to use Cardio for monitoring your HR. I tell you that never I use Cardio with top runners, because it is not a precise way for investigating your effort. But, without coach, is better than nothing.

Why Cardio is not precise ? Because your HR needs to be interpretated. For example, if you can have a max. HR of 200, you can have 150 because your percentage of effort is 75%, or because YOUR HEART IS NOT ABLE WORKING HARDER BECAUSE THE PERIFERAL RESISTANCES FOR BLOOD CIRCULATION ARE AT THE MOMENT TOO BIG. This is the case, for example, of a long run the day after a very hard workout. You have yet in your muscles more lactate than normal, and YOUR BLOOD TRAFFIC IS BUSY.

I explain what happens with an example.

Suppose that you are pedaling using a bike with only one fix gear. You use a rhytm of 80 per minute, that allow you to go at 35 km of speed. You are on a flat road. The road starts to climb a little. You have to reduce your rhytm, because cannot change the gear (so you cannot change your frequency). The gradient becomes harder, for example 15%. If you are no more able to go, you have to go down from your bike. If you are like your heart (the "motor" of the movement), you die because your heart stops working. But, if you are able to reach the top of the hill, AFTER YOU GO DOWN, increasing speed. At the beginning you find easy to enhance rythm and speed. But after 1 km, supposing that the gradient downhill is big (for ex., 15%), YOU

ARE NO MORE THE MOTOR, BUT THE BIKE BECOMES YOUR MOTOR. So, you can reach a rythm of 120-150 per minute, BECAUSE IS THE GRAVITY HELPING THE SPEED OF THE BIKE, AND THE GEAR TAKES ACTION DIRECTLY ON YOUR LEGS. Before you were ACTIVE, now you are PASSIVE.

In our circulation, the same thing happens. When we have periferal resistances very high, because of the "rubbish" that we have in our muscles after tough training, our heart cannot reach high rythm because there is too much work to do for pushing blood faster. When we are ok in our muscles, instead is easy for the heart work at high rythm, because the road is free.

So, you must interpretate the data : may be that 180 is not a big effort because everything is easy, and that 130 is athe max effort of the moment because your limits are in another part of your body.

Anyway, I can suggest you this schedule, looking for the level of effort :

Mon - Long run at 70%. The goal is to increase duration. Start from 1 hr 20, adding 5-10 min every week, using the same HR

Tue - 30:00 easy + Sprints uphill for increasing your mechanical engine. May be from 10 x 80m to 20 x 80m. You must use max speed. Don't care about recovery. After some rest, go for 2-3 km fast.

Wed - Easy regeneration. Go for 1 hr - 1 hr 20, very easy.

Thu - Long fartlek. Start with 20:00 warmup, then you go for 5 times 5:00 at 90% of max HR, recovering 5:00 at 60%. The evolution of this training is to add 1:00 of test every week till when you arrive at 5 x 10:00 at 90%. When you reach this goal, work for enhancing the speed of recovery, going at 65% - 70% - 75%. In this way you can build quantity and intensity at the same time.

Fri - Easy regeneration again.

Sat - Very long, using progression. From 28 to 34 km in about 6-8 weeks. The first time, stay about 60% of your HR because this training has the goal to buils muscles, tendons and ligaments for the duration. After, start to qualify, running at 80-85% of your HR, the final 10:00, then 15:00, then 20:00 and so and so.

Sun - 30:00 easy + fast run at 85% of your HR. Go from a minimum of 5 km to a max of 10. Run till your HR doesn't raise too much.

At the same time, if you can do some exercise for improving elasticity, flexibility, reactivity, is good thing.

Try to use a similar schedule for about 2 months. After this, you can be ready for a SPECIAL PERIOD, where is possible to put some more specific workout in direction of the race that you want to prepare (may be 5 or 10, I don't think yet Marathon).
