The 12th Congress of the International Track and Field Coaches Association (ITFCA), Aix-les-Bains (FRA), March 20-23, 1990

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The 12th Congress of the International Track and Field Coaches Association (ITFCA) was held at Aix-les-Bains, France, prior to the IAAF World Championships in Cross Country. The themes of the Congress were "Middle and Long Distance, Cross-Country and Road Racing". About 150 participants representing 27 countries attended.

Opening speeches were given by ITFCA Honorary President Otto SZYMICZEK, ITFCA President George DALES, the President of the Organizing Committee Jean BOETE and the President of l'Amicale des Entraineurs Français d'Athlétisme Daniel LAMARE.

After the opening ceremonies the business of the Congress began with a "round table" discussion which was followed by lectures from invited speakers. The most important points of the round table and the lectures are summarised below. In some cases the reporters' comments are also included.

Round Table Discussion

The participants of this discussion were former international class runners Gaston ROELANTS (BEL), Michel JAZY (FRA), Jean WADOUX (FRA), Jean-Pierre VILLAIN (FRA) and Robert BOGEY (FRA). The first part of the discussion covered these athletes' training processes and their views on the current situation of high level running. The participants then expressed their opinions concerning the significance of World Junior Championships.

Gaston ROELANTS said that these Championships were a good idea in
general, but that there was danger that the high qualifying standards set by the national federations may lead to the premature burnout of young athletes. He also felt that there was a danger that coaches would want to distinguish themselves at the cost of the young athletes.

Michel JAZY said that he thought that the performances these championships were sometimes unbelievable and that he therefore doubted the African runners' birth dates were correct. He said that, in his opinion, an athlete's goal should not be to win the title of World Junior Champion, it should be to win an Olympic medal. He felt that when all things were considered, it was only these medals which counted and that records were comparatively worthless.

**Lecture Summaries**

ERIC BOUVAT (FRA): *Achillodynia*

The symptoms and causes of Achilles tendon pain were presented. The lecturer then outlined the conventional and surgical measures for treating the problem. Post-operative measures such as heel wedges of varying height and preventive measures (choosing of a proper running surface, individual dosage of training intensity and volume, nutrition (in particular sufficient fluid intake) were covered in detail.

M. JANIN (FRA): "*L-carnitine*"

*L-carnitine* is an amino acid which is stored in the liver and muscles. It is contained in foods such as meat. *L-carnitine* is responsible for fat transport and controls thermo-regulation through the burning of lipids. According to the lecturer, this amino acid, which is not a doping agent, will enhance both the athlete's endurance capacity and regeneration. If the dosage is high enough, *L-carnitine* may also lead to the improvement of muscle strength. Even in cases of high dosages (15 mg per day) no side effects, except increased sweating and occasional stomach upsets, have been observed. A dosage of 3 mg of *L-carnitine* per day is considered normal.

**Comment:** This paper was presented by the French producer of *L-carnitine*. According to Finnish and Italian studies as well as experiences from the Federal Republic of Germany, the positive effects of *L-carnitine* are doubtful.

JEAN-RENE LACOUR (FRA): *Maximal aerobic velocity and performance capacity*

The "Maximal aerobic velocity" exercise test, which is performed on a treadmill and consists of increasing the load level (velocity) every 30 seconds until exhaustion, was presented. According to the lecturer, who is a scientist working with the French national team, the exertion is aerobic in nature and the test measures the maximum speed the runner can maintain in this state. He cited the high correlation between this test and similar field tests, where a bicycle is used as pacemaker, as proof of its ability to measure the specific quality of maximum aerobic velocity.

**Comment:** The comparison of results of two tests can prove the precision of the tests but does not necessarily say anything about the specific quality measured. It is generally held that the measurement of maximal aerobic speed can only be made with test forms which are specific in terms of aerobic or anaerobic activity. The 30 second duration of each level of this test does not seem to be specific for measuring the maximum velocity an athlete can maintain aerobically. Conventional knowledge would suggest that
a minimum of 30 minutes of continuous speed running would be required.

GEORGES GACON (FRA): A new definition of maximal aerobic work in middle distance runners

The lecturer, the French national coach for the middle distances, discussed the practical implications of the “Maximal aerobic velocity” exercise test presented in the previous lecture by Jean René Lacour. An example of the use of this test to monitor training intensity was given.

Comment: As mentioned above, aerobic capacity or intensity can only be measured by tests which are themselves specific in nature. The test presented allows neither the prognosis of competitive performance nor the control of training intensity.

CAMILE VIALE (FRA): Mental preparation of runners

The lecturer discussed several psychological aspects of long distance running. His main points included the following:
1) The ability to withstand “suffering” is a performance determining factor and must be included in specific competition preparation. He described an experiment to test this ability which included a 30 minutes tempo run at a pace corresponding to a lactate value of 4 mmol/l.
2) A coach should take care that his athletes work on their further mental development and that the best psychologist for an athlete is his or her coach. However, a professional psychologist could help the coach to identify specific problems. He pointed out that a coach who tries to analyse his athletes should be aware of his own self and external images. The coach should also consider the role of the athlete’s social partner.
3) In the area of psychology, the task of the coach is to try to enhance the athlete’s motivation. He said that motivation has its origin in material aspects (medals, money) but that athletes must always have a performance related goal in their mind’s eye.

Comment: The type of test designed to measure “suffering” should be specific to the athlete being tested. For example, for a 400/800 metre type runner running with 4 mmol/l is relatively easy while for a marathon runner this would be so difficult as to be impossible. The difference in this ability is a function of the fast-twitch/slow-twitch ratio of the individual athlete.

GIORGIO RONDELLI (ITA): Interval training, anaerobic endurance, fartlek differences in training methods and suggestions for training plans

The lecturer covered the training methods which he has used with both senior and junior athletes. To start with he identified three forms of training:
- Interval training
- Acidosis tolerance training
- Fartlek

According to the lecturer, when the duration and recovery intervals are the same, the difference between interval training and acidosis tolerance training is in the intensity or running speed of the efforts for example:
- 15 x 300m in 48 seconds, recovery interval: 40 seconds (100m jogging) = interval training;
- 15 x 300m in 44 seconds, recovery interval: 44 seconds (100m jogging) = acidosis tolerance training.

The lecturer then addressed what he called “fartlek” training. The type of training he described was a very intense run with a set number of specific duration efforts done on an exactly meas-
ured course. In comparison to the two types of training already mentioned, this "fartlek" has a higher intensity of training load caused by a higher running speed (at about the anaerobic threshold) during the recovery intervals. The result is a run with a very high average speed, for example, up to 20 km with an average speeds of 4:00 to 3:30 min/km for 800m runners and 3:30 to 3:20/km for 10,000m runners. These runs include up to 15 x 300m in 44 to 48 seconds. (Compare to interval and acidosis tolerance training.) Three variants of this "fartlek", short, medium, and long, in which the load duration and recovery intervals vary are used depending on the respective athlete's competitive distance. This "fartlek" training is used particularly with junior athletes.

The lecturer also mentioned that he prefers to monitor training through the results of lactate tests which he feels are more precise than using the "Conconi" test.

**Comment:** In addition to the misuse of the well established term "fartlek", the use of the combination of volume and intensity described by RONDELLI on junior athletes should be reconsidered.

**MANUEL BUENO (ESP): Fatigue and regeneration**

The emphasis of this lecture was on the problems of exact load dosage and the subsequent process of recovery. The load parameters leading to fatigue must be controlled via intensity and volume. These parameters are dependent on various physiological parameters and biochemical processes. The dangers of overtraining and the principle of super-compensation were dealt with. According to the lecturer the uncritical application in training of methods from sports-medicine is problematic. For example, he cited difficulties in using the anaerobic threshold to monitor training.

For the process of regeneration, which can still not be fully explained, he suggested the use of the following "classical" methods:
- nutrition
- relaxation (sleep, relaxation exercises)
- physiotherapy (massage, baths, sauna, electro-stimulation, etc.)
- variation of training conditions (change of training site, organisation of recovery intervals, loads, compensatory sport, etc.)

**MARIO MONIZ PEREIRA (POR): The Portuguese school of middle and long distance running**

The Portuguese school of middle and long distance running was described. The training employed by this group is characterized by a complex development of performance-determining factors. The main principle of training is to promote fast running by all runners within the training group. Therefore, the recovery intervals are relatively long and the distance of the uphill runs and sprints is 120m or less. Interval training is done two times per week all the year round in order to preserve the athlete's competition form. Endurance is developed by 40 to 60 minute runs on the beach. The training site is varied for each session to minimise psychological stress. Instead of weight training the strength is developed through uphill running (up to 10 x 120m starting every 60 seconds) and running on steps. The lecturer said that he is against the participation of his junior athletes in the World Junior Cross Country Championships since desire to perform well leads to excessive training loads at too young an age.

**Comment:** It is right to say that too early and too high a training load should be avoided but, on the other hand, one
of the most important objectives of junior training is, gradually over a long period of time, to increase the capacity of the athlete to the point where he can train twice a day. By avoiding increased loads in the junior years a sharp increase when the athlete becomes a senior may be required. This could lead to an increase in injuries.

PETER COE (GBR): Simultaneous development of performance determining factors of middle distance running through multi-pace training

According to the lecturer, the emphasis of a middle distance runner's preparation should be on the development of speed through intensity-oriented training. The repeatability of a maximally fast 400m time is the basis of a first class 800m performance while the repeatability of a maximally fast 800m time is the basis of a first class 1,500m performance. The athlete, therefore, must develop the ability to perform many repetitions at a very high speed. (For example, Sebastian COE, who could run 400m in 46 seconds, did sessions of 6 to 8 x 300m in 39 seconds with 45 seconds recovery intervals.) The athlete's ability to run 6 to 7 races in nine days, which is necessary for achieving world class performances at the Olympic Games, was a second performance determining factor which was covered. According to the lecturer, this is purposely developed through high intensity training and a high density of training loads.

The lecturer explained multi-pace training for 800/1,500m runners: In each microcycle, five different running velocities (oriented towards the respective competition velocities) are realized, including under-distance runs for the 800m and over-distance runs for the 1,500m.

Examples of training programmes were presented. A special variation of interval training was discussed. In it, the intensity of a training session is increased by lengthening the load duration, increasing the load intensity and reducing the length of pauses. The total distance run is 1600m, the running speeds are between the competitive 1 mile velocity and the competitive 400m speed.

The lecturer said that, for middle distance runners, strength should be developed by a goal oriented barbell training programme, after a foundation of general physical fitness had been laid. This process takes a whole year and is done through circuit training.

Comment: The orientation of training towards the objective speed of the athlete's particular race is a good example of event specific training. We consider training for middle distance to be specific if it is at more than 95% of the goal speed for more than 75% of the duration of the race. One of the keys to the good results obtained by British middle distance runners in recent years is the capacity to vary speed on the basis of a high level of strength endurance and, at least in the case of Seb COE, multi-pace training.

STEFAN KEPKA (POL/MEX): Endurance training using the example of the 10,000m world record holder Arturo Barrios (MEX)

The lecturer, who coaches both top level and young athletes, emphasises the use of continuous runs (more than 80% of the total load) for the development of what he calls "running endurance". These runs are performed at different intensities. The share of the continuous runs at each intensity are as follows:

- Low: 60 to 70%,
- Medium: 20 to 30%,
- High: 15 to 10%

He said that he attaches great value to regeneration in the form of short and
slow continuous runs, as the continuous runs of 20 km lead to an accumulation of the training load (rise of the pH value from 7.25 to 7.40).

According to the lecturer, the training of BARRIOS in 1988 was characterized by a reduction of the "slow" (low intensity) continuous runs from 85 to 60% of the total load. The longest distance run was 20 km at an average velocity of between 3:30 and 3:40 min/km, the last km being run between 2:27 and 2:40. Altitude training (3000 to 3600 metres above sea-level) was also performed.

Apart from continuous runs, the lecturer said that his athletes perform fartlek training throughout the year and use the following training forms when appropriate:
- interval training performed two times per week, the total volume is up to 12 km each session, the duration of the individual efforts is normally between 3 and 6 minutes, recovery intervals between 1 and 2 minutes, 400 and 200m distances are also used.
- competition-specific training, performed during the competition block, sharpening, which takes seven weeks, with the emphasis on under-distance competitions. According to the lecturer, the ideal under-distance race for 10,000m runners is not the 5,000m, but the 1,500m.
- strength training in the form of uphill and bounding runs over up to 100m.

JOACHIM NEUHOFF (GDR): Yearly training structure of the middle and long distance runners of the DVfL in the GDR

Neuhoff's paper is published in full in this issue of NSA.

VLADIMIR BONDARENKO (URS): The structure of the yearly training cycle of the Olympic winner Olga Bondarenko during the preparation for the Olympic Games in Seoul

The training programme used by the winner the women's 10,000 metres in Seoul was presented as follows:

A double periodization was conducted: The 1st preparation period was in November/December and the 1st competition period was in January, February and March. The 2nd preparation period was from March until the end of May while the 2nd competition period was from June to the end of September. October was the transition period.

In November/December and April/May the emphasis was on the development of aerobic capacity. Two hard weeks (training volume: 160 to 180 km) alternated with one easy week (training volume: 100 to 110 km). The monthly training volume was 600 to 650 km. The training contents included tempo runs over 10 to 15 km and repetition sessions of 1,000 and 2,000m runs with 2 to 3 min recovery intervals, which were performed two times in a two-week period.

In the intensive microcycles, particularly in April/May, 25 to 30 km runs (velocity of 4:00 min/km) and uphill runs (10 to 20 x 400m; gradient: 15 to 20 degrees; intensity: up to 90%; recovery interval: jogging back to starting point) were performed once a week. The uphill runs during May 1988 (four training sessions) totaled 24 km. The average pulse rate during these runs was 180 beats per minute.

In order to maintain the athlete's speed during the preparation period, the following training forms were used:
- 100 to 200m rhythm runs with no less than 10 repetitions per training session
- acceleration runs over 60 to 80m up to maximum velocity with a maximum number of 6 repetitions.
During the 1st competition period the training volume was reduced to 140 to 160 km per week. At the same time the running distances are reduced and the running velocity is increased. Cross-country and road races are preferred, since these are a good basis of the specific endurance required in summer. However, indoor races over 1,500 and 3,000m were also included.

By the beginning of the 2nd competition period in June, BONDARENKO had already taken part in twelve races. Once she had qualified for the Olympic team she did not take part in competitions in order to have time for altitude training and a training camp. Detailed descriptions of the high-load 3 week microcycle prior to the Olympic Games and of the last two weeks of training prior to the 10,000m final were given.

Comment: Perhaps the most interesting element of this lecture was the discussion of the final preparation for the major event. For many athletes achieving their top performance in the year's most important event remains problematic. The strongly needed realisation of a concentrated training phase which covers all training forms in a period of 4 to 6 weeks immediately prior to the top competition is too often undermined by excessively late selection dates set by national federations. One factor in the good results of eastern European athletes in major competitions is the effective use of this final training phase. This item is also well covered, including practical examples, in the article by Neuhoff elsewhere in this issue of NSA.

WALTER ABMAYR (FRG): The training of Kenyan runners

The lecturer identified factors which have contributed to the success of Kenyan middle and long distance runners. These included:

- natural talent (innate abilities, slim body types)
- much running (hard living conditions)
- goal-oriented screening (schools as "cradles")
- motivation (success in sport leads to social/professional status; tradition and models; junior championships facilitate transition to top-level training and competition)
- training (more coaches in schools and clubs; organized competitions as prerequisites of goal-oriented training; better training planning)
- environmental conditions (geographical location - altitude more than 2,000m; better sport facilities; natural training environment; nutrition; no distractions; support by the government).

The lecturer then discussed the training of Kenyan middle and long distance runners. He said that periodization is known in Kenya, but is not practised on a scientific basis. Group training, which corresponds with African mentality, is an important guarantor of success. In training camps all athletes train together in a professional, goal-oriented and controlled manner. The success of the athletes also depends on their work and training methods being in agreement with their environment. The athlete's physical feeling, which determines training work to a great extent, plays an important role particularly in training control. The main training forms used were outlined and explained as follows:

1) Continuous runs (20 to 25 km) for the development of the aerobic capacity. Long runs even for young athletes, sometimes 100 km per week.

2) Fartlek (5 to 10 km) according to the classical principle of load variation in the form of distance and tempo variation.
3) Extensive interval training (150 to 2,000m, recovery intervals 30 to 120 seconds) is used in most periods with high numbers of repetitions. The running speed is very individual and the preset recovery intervals indirectly determine the running speed. The athlete's feeling during the run is of decisive importance.

4) Hill training, hard hill runs are very popular, the athletes like training in hilly terrain very much and employ the following variations:
   - Long runs in hilly terrain as a kind of fartlek of up to 90 minutes duration.
   - Uphill runs in the form of extensive interval training, 150 to 300m at medium to low intensity, 7 to 8 degrees gradient.
   - Uphill runs in the form of intensive interval training, 60 to 150m, each run a bit faster than the previous one, 5 to 12 degrees gradient, 10 to 20 repetitions, recovery intervals of 60 to 180 seconds.

5) "Hare runs", a kind of pursuit runs are a training supplement. All runners in a group drive each other to a running rhythm close to or up to competitive speed, duration between 30 and 45 minutes. These runs are started very slowly, the speed is sometimes not higher than during regeneration runs.

6) Strength training in the form of circuit training. The load structure during the preparation period is as follows: 3 to 4 circuits with 60 to 120 seconds of work, 25 to 35 seconds recovery interval, recovery interval between circuits 2 to 3 minutes. During the competition period the load is reduced to 1 to 2 circuits with 30 to 45 seconds of work, recovery intervals 25 to 45 seconds, recovery interval between series 3 to 4 minutes.

M. LITOVCHENKO (URS): Training planning for female top 800, 1,500 and 3,000m runners

The lecturer, who has experiences gained with many top level athletes, described the Olympic 1500m Champion Tatyana SALMOLENKO's preparation for major competitions (European and World Championships, Olympics). According to the lecture the following principles are keys to success:
1) Knowledge of the athlete's actual physical possibilities and the performance goal aimed at. Example: A female 800m runner runs 2:02 in 1987, her performance goal for 1990 was then set at 1:55.
2) Motivation of the athlete in training and competition.
3) The realization of a top performance depends not only on the knowledge of to what extent the athlete is loaded quantitatively or qualitatively, but the knowledge of her organic capacity and its development during training.
4) The planning of training sessions which make the development of the athlete's performance possible without running the risk of psychological and physical over-loading.
5) After approximately 6 to 8 weeks the organism has adapted to a certain training form and load, and its reactions are increasingly reduced. This means that a variation of training contents must take place.
6) For each result and distance the energy paths are different: aerobic or anaerobic. As the athlete's performance improves, the percentage relationship between aerobic and anaerobic work changes: the anaerobic share increases.
7) Strength training must be planned in accordance with the performance goal.
8) The realization of a high performance level is dependent on the aerobic and glycolytic (anaerobic) capacities of
the athlete. Aerobic capacity can be increased and maintained easily. Aerobic training should be no longer than 3 to 3.5 months, as thereafter a further performance increase is hardly possible. The other anaerobic and phosphocreatine factors are determined more by genetics than aerobic capacity.

9) The training in the area of the anaerobic threshold (4 to 8 mmol) should be no more than 80% of the athlete's training capacity in terms of volume and velocity in order to avoid that the athlete exhausts her energy reserves. Training in this area should be done at three day intervals. Example: Even though the athlete is able to run 6 x 2,000m, she is only allowed to run 4 x 2,000m.

10) Anaerobic training starts no sooner than 2 to 2.5 months prior to the main competition. This is sufficient for the improvement of this area.

11) The important strength training must be finished 1.5 months prior to the first competitions.

12) The athlete's form must develop progressively, which means that the athlete should seek to develop continuously rather than too quickly with phases of stagnation.

13) In a training cycle which is characterized by an increase of aerobic training the anaerobic training is reduced and vice versa.

Examples of aerobic, strength, speed and specific anaerobic training sessions were presented as well as a plan for a double periodization (winter training period (indoor season): easy training; summer training period: "hard" training sessions for the improvement of competition results).

The lecturer said that in the course of the year, the following control test is conducted two times each month: 6 x 1,000 m, recovery interval: 10 to 15 minutes. (Running speed: 1st run = 5 min/km, each successive run 20 seconds faster) After each 1,000m interval blood is withdrawn for the measuring of the athlete's lactate concentration.

**Summary**

In this Congress the variety of approaches taken by the lecturers towards reaching the goal of high level performances in the middle and long distance events fell into two main categories. The first was those who try to develop the complex of abilities and skills required simultaneously or within short periods. The second group takes the approach of periodization and develops specific qualities at different times in the training cycle based on the belief that complex development of sports form leads to performance instability, and injuries.

A second interesting division of approaches is in whether the athletes train mainly in groups, as in France, Portugal and Kenya or individually, as in the Eastern-bloc states where the optimization of training (avoidance of over- and under-loads) depends on internal differentiation.

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