

DISCIPLINE GROUP SESSIONS

SPRINT AND HURDLES

(A) Technical and statistical trends through the Olympic Cycle 2000 – 2004

Statistic notes on the 200m performances of the all time best athletes.

Carlo Vittori

The author takes into consideration not only time performances in sprint races, but also best performances at 200m, in order to underline the specific differences with regard to 100m.

With this purpose, he makes reference to the difference in time, as resistance index. Performances of every top athlete are analyzed, suggesting topics to be developed (speed

SPRINT AND HURDLES

(B) Review of training and coaching principles as applied to disciplines.

Sprinter's control of training

Carlo Vittori

This is a delicate topic in the athlete's preparation, providing for a yearly cycle with a preparatory period of 5 cycles. The control tests have the aim of verifying programs, progress, of checking of training purposes and the degree of the improvements in comparison with the planned performances. There is a purpose of verifying the program to check if the athlete's condition is consistent with the predetermined prevision. The tests, referred to the work carried out in a given period, are described according to four groups:

- tests for the acyclic expression of strength;
- tests for the cyclic expression of strength;
- tests of rapidity;
- specific running tests.

For every group of tests the modality of execution and the evaluation purposes, which have to be obtained, are described, in total 12 tests. For each of them the parameters, such as reference standards of specific performances in sprinting races, are also given: the reading of tests results will enable to intervene or not on some capacities, which will permit the support to the performances in the competitive period. Some tests provide for the utilization of instrumentations, for others the reference are the classic field tests.

SPRINT AND HURDLES

(C) Learning systems and teaching methods for young athletes as applied to disciplines.

Some principles regarding the differences between young talents' sports activity and adult great champions' one.

Carlo Vittori

Training activities of a young talent are totally diversified from the ones of an already realized champion. In particular, the lecture deals with the description of the characteristics concerning young athletes' training:

- the activity of training is highly characterized by educational purposes;
- work load have to take into account the quantitative aspects, but especially the qualitative ones;
- a very rich use of training means and methods has to be planned;
- a particular stress has to be put on the mental involvement in the practised activities (initiation);
- it is necessary to establish the full respect of the different phases in the physical

- development;
- one of the main objectives is represented by the learning of technical skills and of their relative mastery during competitions;
 - the organization of training, permitting the full realization of the presented elements.
- Anyhow the main differentiation consists of the fact that the young talent has to build his own future, while the fully-developed athlete has to manage himself in the present.

SPRINT AND HURDLES

(D) Coaching method from technique to strategies in working with high performance athletes as applied to disciplines.

Muscular strength training to run fast

Carlo Vittori

The relationship between the level of strength and the possibility of running fast is very evident and shows particular specificities. The complex articulation and organization of the training actions make this topic very original, such as to involve all the expressions of strength, even though in a different measure.

Training muscular strength in sprinting races has the aim of increasing the level of strength maximum peaks in the rapidity of its expression, influencing more the nervous component rather than muscular hypertrophy.

According to this statement, the Author expounds the different methods, with particular reference on the action of lower limbs extensor muscles, using the following subdivision of strength expressions:

- maximum strength
- explosive strength
- “explosive elastic” strength
- reflex eccentric strength.

The most appropriate drills in relation to the aimed objective are described, in particular three exercises, which are proposed in different ways, through the modulation of the load, of the modalities of execution and of their organization in the training cycles.

ENDURANCE

(A) Technical and statistical trends through the Olympic Cycle 2000 – 2004

Lactate dynamics training

Peter Thompson

Endurance training changed a lot in the 70 years. The author wants to outline the current situation, through an historical review, which is associated with the report of his own evolution as coach in these disciplines. The first turning point occurred when the author understood that the key point was the training at varying paces, after observing the behaviour in competition of the elite Kenyan athletes, who did not care about keeping an even pace, generally considered by the physiologists as the best way for producing the fastest times. The author reviews various kinds of training starting from the “Kenyan intervals” to get to more recent Lactate Dynamics Training, citing also the various coaches, who contributed to his professional evolution. A very important variable to consider is the recovery, which often is performed at a very slow pace. In 1996 the work of the physiologist George Brooks and his concept of the “Lactate Shuttle” offered a valid scientific explanation to the effectiveness of fartlek and of the LDT in endurance disciplines.

KEY POINT

Lactate Dynamics Training
then Lactate Tolerance Training

ENDURANCE

(B) Review of training and coaching principles as applied to disciplines.

Review of the metabolic preparation of endurance athletes

Peter Thompson

Some aspects of energy physiology are studied in detail on the basis of the most recent researches; in particular it is highlighted how the lactate is a dynamic metabolite produced at rest and during exercise. The "Lactate Shuttle" provides a description of the movement and use of lactate within muscles, the systemic circulation and the liver. Being VO₂max a poor predictor of performance, the concepts of vVO₂max and tlimvVO₂max are introduced and defined. The three energy systems and their basis are analysed as interdependent. The lactate system is analysed. Its limiting factor is not, as it has been frequently stated, the lactate accumulation, but the cells acidification provoked by the hydrogen ions. The author considers obsolete the term "anaerobic threshold" and prefers Onset of Blood Lactate Accumulation (OBLA) or Lactate Threshold, indicating the moment when the dynamic equilibrium between production and removal of lactate has been upset and representing a better predictor of performance. In conclusion a table of the percentage of contribution of the three energy systems to the various running disciplines is proposed.

ENDURANCE

(C) Learning systems and teaching methods for young athletes as applied to disciplines.

Peter Thompson

The role, importance and development of two basic components of the young endurance athletes' performance:

- the ability to run naturally with an awareness of the rhythm
- a functional core strength, that is essential to move with a natural posture, with efficiency and control.

It is necessary to build carefully these aspects in the training process, since it has become more and more difficult to find young athletes, having good motor requirements especially with reference to these components. As far as rhythm is concerned, the attention is focused on fartlek, with a selection of structured sessions. As regards strength, the various kinds of contraction are schematically presented, analysing their function and importance in relation to the performance model and the limiting factors. Examples of exercises are illustrated, with a particular stress on the importance of training isometric and elastic components of strength.

JUMPS

(A) Technical and statistical trends through the Olympic Cycle 2000 – 2004

Statistical Trends in the Jumps through the Olympic Cycles 1996-2004

Wolfgang Ritzdorf

The author analyses the trend in the jumping performance of top level athletes (1st place; 8th place; average 1-3 and 1-8) in the Olympic Cycles 1996-2004). The trends are described for Men and Women Long Jump, Men and Women Triple Jump; Men and Women High Jump and Men and Women Pole Vault. Finally the change in performance in each event is reported for the period 2000-2004 and the percentage of women performance compared to men is illustrated.

Technical model and individual adaptation

Wolfgang Ritzdorf

The origin of the technical models is questioned: do they derive from the technique of the world record holder, from the technique of top athletes in general or from the specific biomechanical

analysis of the event. An additional challenge is constituted by the degree of influence of specific factors (i.e. Age, Gender, Body constitution (especially in the high jump), Physical preconditions (speed, strength) in the choice and implementation of the model. To allow an optimised solution of the problem specific strategies are suggested that include:

- the identification of key elements that are identical in top athletes;
- the analysis of the contribution of the personal style to performance;
- the analysis of the possible negative effects of the personal style on the performance.

JUMPS

(B) Review of training and coaching principles as applied to disciplines.

Individual responses to defined training loads

Wolfgang Ritzdorf

The goal of this work is to identify typical individual responses to training loads and their time delay in top athletes. Questions range from the individual or general nature of the responses to defined training loads in top athletes, the existence of a typical profile in time delay of adaptations and of typical training contents that can be considered ideal for each athlete. In the study 10 female high jumpers of the national team with performance between 1.87m and 2.01m have been observed during three weeks training camps and in some cases for 6 months daily training. The analysis of the results identified significant variations in responses to training loads and also for adaptation delays. This procedure allowed the determination of individual profiles for 8 of the 10 jumpers. These findings were to plan the content of the last training sessions before competition

Application of jumps off a short approach

Wolfgang Ritzdorf

Jumpers train very often with shorter approaches compared to those that they use in regular competition. Sometimes these kind of jumps amounts to more that 50% of the global jumping volume, because they allow higher training volumes and better concentration on the details. In spite of this, the good performance obtained in these jumps is often not matched by the real competitive result that often falls short of the expectations. This is due to different reasons including: basic change of take-off, basic change of time programme, improper reactive strength pattern. Some indications are finally given to solve this problem: the overall number of these jumps must be reduced, the speed component has always to be respected and jumps with full run-up must be carried out even in the preparatory period.

JUMPS

(C) Learning systems and teaching methods for young athletes as applied to disciplines.

From Junior Age to Top Performance

Wolfgang Ritzdorf

The author tries to answer a basic general question about the importance and the meaning of the competitive performance obtained in the junior age for the future career progression. Particular attention is paid to the further progression of performance of World Junior Championship (WJC) finalists, and to specific regional or "block" differences. To answer these questions a huge database of 895 male finalists of WJC between 1986 and 1996 has been set up and the career progression till 2002 has been analyzed (with reference both to personal records and success in elite competitions). The general analysis showed that 64% showed further progression of performance; 26 % made the final in WC and/or OG and the personal best was obtained after 3-5 years. North American and Caribbean athletes showed a higher frequency of further progression, while Africa and Australia led the number of Olympic finalists. Regional differences are also

reported in the time needed to reach the Olympic final, the personal best and also in the percentage of performance improvement. Throwers show a more significant improvement, while jumpers reach more often the Olympic final. These trends have however changed in the latest period: the mean percentage of progression dropped from 8% in 1986 finalists to 6% in 1996 finalists, and the time needed to reach the personal best dropped from 5 to 3 years. Amongst the medallists 83,1 % showed further progression of performance. 84 % of them had a ranking in the top 100 in the following years . The respective results for the non-medallists: 58,2 % with further progression; 45,4 % in the top 100.

Early specialization

Wolfgang Ritzdorf

A recurrent phenomenon is frequently observed in numerous young athletes who are quite successful in junior championships but do not have further improvement of performance after that age. This is often also a cause of drop outs .On this respect, the orientation of the system of competition is extremely important in order to avoid this problem. It should include local competitions (till 13 years), regional (till 15) and from 16 year based on combined events, with National competitions. The strategy should therefore be oriented to the search of talent for event groups through specific Event Group combined events

JUMPS

(D) Coaching method from technique to strategies in working with high performance athletes as applied to disciplines.

Periodisation of Training - facts and fiction

Wolfgang Ritzdorf

A study has been conducted in 1996-99 on 3360 Athletes, who were among the Best 20 in 14 events (not including middle/long distance) in the United States and Germany. Questions asked were 1) How many athletes reach their season best at the major competition? 2) Are there differences between USA - GER? 3) Are there any block specific differences? 4) Are there any differences between athletes in national and international competitions? Main criteria of observation included the Average deviation of Seasonal best in main competitions (Nat. or Internat. Championship), the distribution of the seasonal best, the percentage of athletes who reach their best result at the day of the main competition or within three days; the percentage of athletes within a 1%-range from the seasonal best. The results of the study show that around 10% of the season bests were reached on the occasion of the final, 14,2 % (GER) and 19,4 % (USA) if we include the preliminary rounds and the semi-final. 1/3 of German athletes reach their best after the main competition and 1/3 of Americans more than 6 weeks before. A specific analysis of the German Team at the 2004 Olympic games is also illustrated.

Changes in training before major competition

Wolfgang Ritzdorf

The preparation before major competition is critical for the achievement of top level performance. In most of the cases, the main emphasis is placed on the variation of volume and intensity. Coaches should try to find additional possibilities to tune training with competition. Essential questions on this respect concern the possibility to simulate competition in training and the time span during which the athlete should work on details. Different ideas are expressed to optimise pre-competition sessions, especially as far as the evaluation of the jumps carried out in training. Ideas on technical modifications are also expressed: technical changes should not be introduced in the last two weeks before the competition, when it is necessary to optimise the available level of skills. It is also necessary to focus training on rhythm and feeling instead of details. Also is useful to introduce limitations and disturb factors, following examples of other sports, for example through the introduction of time limits per jump in certain training sessions or other elements of disturb. The change of the position of the coach is also recommended.