

BASIC PRINCIPLES OF CYCLE TRAINING (ref Dr Peter Konopke)

TRAINING CONCEPTS

The concept of training, requires an understanding of 'practice', 'fitness' and 'sport'.

Practice is understood to be the systematic repetition of desired movements or actions, with the aim of improving performance without any bodily changes in the organism. *Practice is limited to the improvement of the ability to move and function.*

Fitness is understood to be a situation of being in a good state of readiness, both *physical* and *mental*, to perform a given exercise.

Sport - in this context – is understood to be a muscular commitment which is either competitive in character, or has the aim of achieving certain personal goals.

Training has as its goal the preparation of sportsmen to reach high sporting performance. Each training session is a planned preparation process. In high-effort sports, training demands a personal commitment on both physical and psychological planes.

Training makes the body anatomically and functionally suited to the desired purpose.

THE BASICS OF LIFTING YOUR PERFORMANCE LEVELS

'Increasing the level of cycling performance' is a way in which you can develop and express yourself. Without exercise or physical demands on them, the functions of the human body waste away. It follows that, through exercise and physical demands, the body can adapt itself to assume greater and greater burdens - provided this exercise fulfills certain conditions. The concepts of imposed physical load, adaptation and increased performance are linked by physical laws.

1. In order to be able to help the adaptation of the body to greater imposed loads, training sessions must reach an optimal intensity and be of at least a given duration. Only training sessions, which upset the psycho-physical equilibrium to such an extent that they are considered a burden, can trigger off the adaptation processes. The intensity and extent of the training session should take account of the individual and his state of fitness.
2. Every worthwhile training session produces tiredness, and a transient lowering in physical capacity. But in the recovery period the desired functional and anatomical adaptation processes take place. In this way the organism regenerates itself, recovering to a level higher than before - a phenomenon known as overcompensation, the body building itself up to be able to meet such an effort again. This feature of overcompensation is the basis behind the idea of progressive overload in training. *Effort, tiredness, recovery and overcompensation* must be regarded as a single entity of the training process.
3. Behind every optimal effort is a training effect. But sometimes one can observe an apparent standstill in performance, although the efforts have been applied regularly and with sufficient intensity. Then suddenly at a given point there is a considerable performance improvement. This 'belated transformation' can be brought about by especially intensive training efforts, or by competition.
4. The higher the level of 'effort tolerance' becomes, the effort demanded must become greater. For this reason the training effects are greater when fitness is at a low level. As performance levels get higher, the effect of repeated training sessions of similar intensity becomes less.
5. Training-related adaptation is reduced if the demands of the training programme are too low, or are not applied at the right time. The body always reacts to the demands which

circumstances place upon it. With increasing fitness, the ability to recover also increases. Thus efforts can be made at shorter and shorter intervals. Therefore progressive overload only works when the increased effort is demanded during the overcompensation phase following the previous effort.

6. Stamina results especially from efforts of long duration but of low or medium intensity. Power and speed come from maximum or near-maximum efforts over short duration. The organism always reacts to the type of demands placed upon it.

Considering the above points, planning of training sessions should take account of the following factors:

- Effort intensity
- Proximity of effort
- Volume of effort
- Duration of effort
- Structure of effort
- Degree of effort
- Frequency of effort

Effort intensity

In cycling this is relative to the pedalling rate, the amount of power put into pedalling, and to the speed reached. In order to stimulate the adaptation process in the cardio-vascular system, the intensity of effort must be such that the heart rate reaches at least 65% of maximum.

Proximity of effort

This is a matter of time between different efforts during a training session. The better a rider's condition and his tolerance to effort, the more frequently the efforts can take place, and the longer they can last. The length of the gap between efforts depends on the speed of recovery. This is particularly important in interval training, repetition training and circuit training.

Volume of effort

This can be measured either by the distance covered during training, or by the duration of the effort periods. Efforts of a given intensity only have the best training effects when they are part of a training session that has the right volume. This can be judged if the efforts produce signs of fatigue. The fatigue should be such that its effects are felt for some time after training finishes.

Duration of effort

This is the length of the effort that will vary depending on the kind of speciality for which the rider is being trained.

For stamina training the efforts should last long enough for signs of fatigue to be clearly evident. Long series of efforts should produce fatigue and trigger off the recovery processes. At the end of the effort a drop in performance level should be noticed.

For power and speed training, fatigue should not enter into the picture. Instead, the effort should be directed at a high pedalling rate against maximum resistance with maximum concentration on the task.

In order to improve stamina, the fatigue processes must be induced, and the duration of effort should be at least one hour. If the interval system is being used to improve strength-stamina, then the effort periods should be between 8 and 12 minutes.

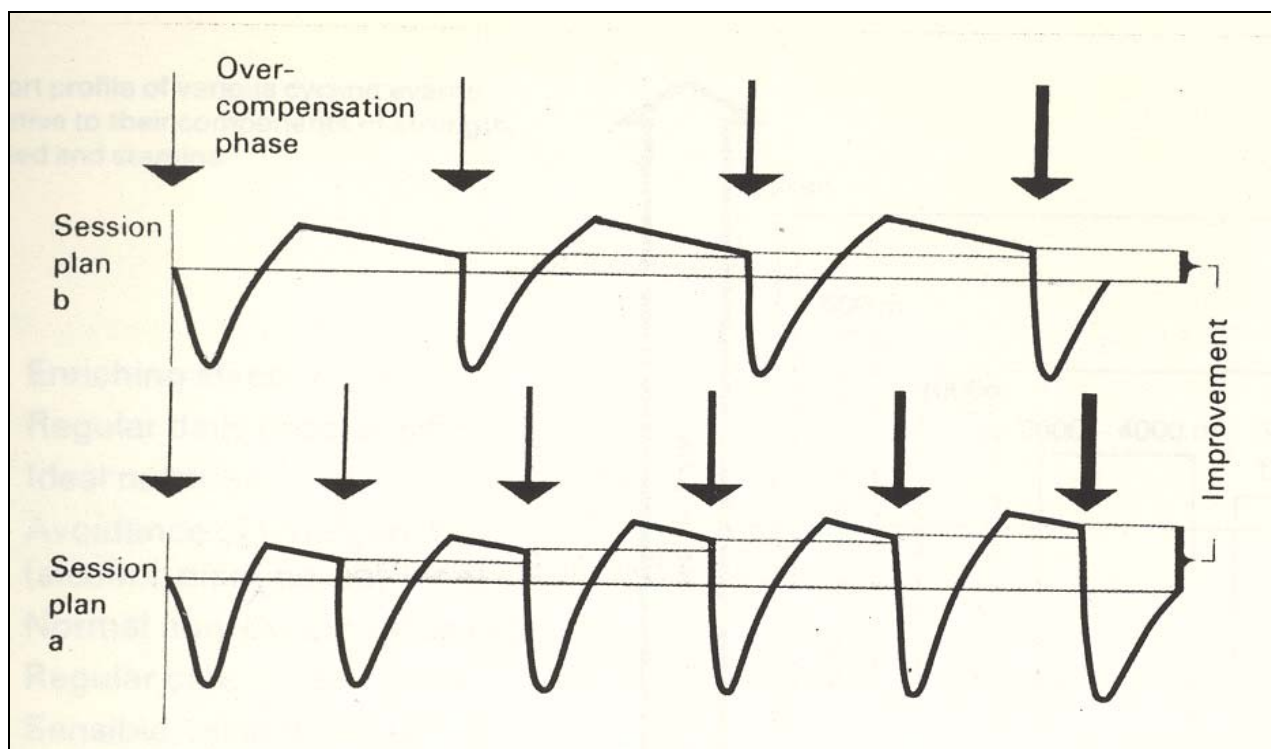
Structure of effort

By this we understand the quality of the training or the training session, essentially the relationship between the intensity and the volume of the effort. This structure changes

according to the aim of the training session (strength, stamina, speed, technique, tactics). It also changes with the state of fitness. Splitting a training plan into various sections can only work if each section is properly structured, then the goal of the whole process is achieved.

Degree of effort

A given effort can actually *feel* different, depending on the state of the rider at the time (how you feel). You can estimate the degree of effort by the degree of fatigue and the speed of recovery it produces. You can normally assume that a given effort is having good training results when it produces extreme fatigue. With this in mind you can choose between small, medium and large efforts.



Frequency of effort

Since the body recovers more quickly with increasing fitness, the frequency of effort should also increase. A new effort should thus be made once the recovery from the previous one is completed. The new effort will have no worthwhile effect if the body has not recovered. The frequency and the structure of the efforts demanded should be in harmony. Normal frequency for a beginner would be 3 to 5 sessions per week, for the advanced rider 6 to 8, and for the top-class rider 8 to 12 sessions per week.

