

Supercompensation

The most important biological law

As you have already learnt, homeostasis characterises the constant state of the internal environment and organ functions, which is immediately restored by control and compensation mechanisms when the balance is disturbed.

Supercompensation is an excessive adaptive reaction of the organism as a result of a stress-induced deflection from homeostasis. The triggered recovery processes improve performance beyond the initial level.

Homeostasis

In simple terms, homeostasis can be described as the biochemical balance of anabolic and catabolic processes within the organism. Each person has an individual equilibrium that is adjusted according to everyday, repetitive stresses. Beginners have a weak and unstable homeostasis that can be easily disturbed. Advanced practitioners have a high and stable homeostasis. You may remember the example in which we talked about how the cardiovascular system of a physically inactive office worker is significantly less efficient than that of a carpenter who is physically challenged on a daily basis.

This and other examples make it clear that the body adapts to regular stress in order to withstand it more easily. Homeostasis is the most important biological characteristic and a basic prerequisite for training processes.

Stress-recovery-adaptation

The examples also make it clear that stress stimuli are important. If stress stimuli remain below a certain individual threshold value (20-30% of the individual maximum stress capacity), no positive adaptation symptoms are triggered. Adaptation is therefore only triggered by a quantitative and qualitative stress minimum. Exertion, fatigue and recovery should not be regarded as separate phenomena of training, but rather form a finely tuned interplay of effects.

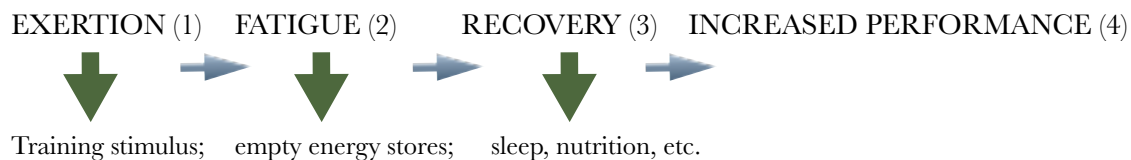
Stress stimuli can be set in different ways. Training is a targeted way of providing stress stimuli. Training is a targeted, planned and systematic process to improve performance. The aim of training is to change and improve the body and therefore its performance. It does not matter whether it is performance in the sense of competition or performance in the sense of maintaining health and longevity.

Training is a process of adaptation to stress stimuli and is always based on the concept of stress-recovery-adaptation. Repeated activities can lead to adaptation. To improve performance, it is first necessary to present the body with a new, unfamiliar task (= effective training stimulus). The body responds by adapting (fatigue + recovery = supercompensation).

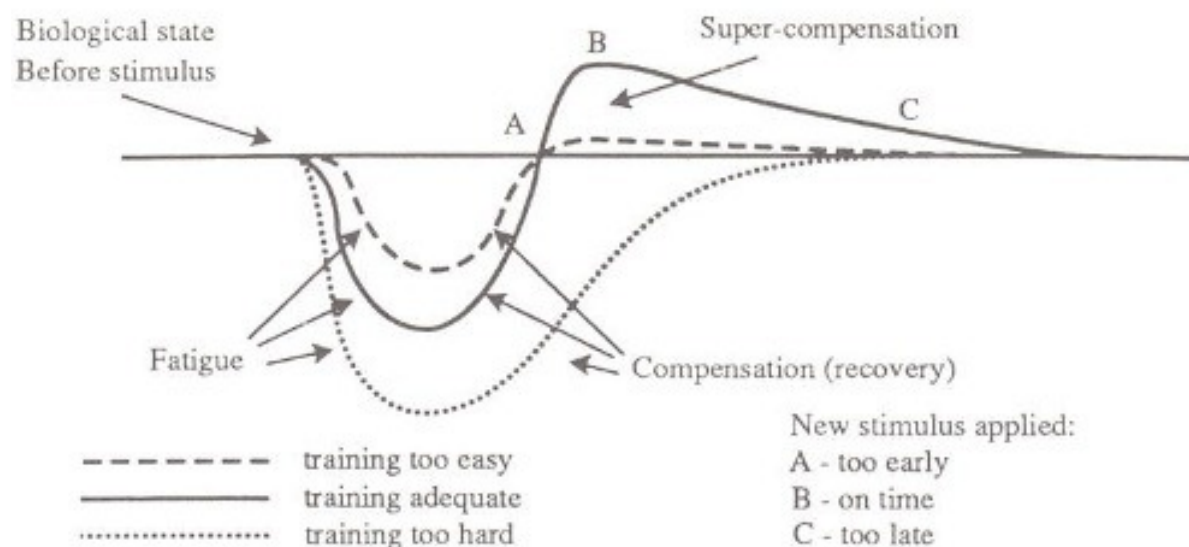
Supercompensation

The principle of supercompensation is an important theory for improving performance. It is crucial to understand this theory in order to utilise it as effectively as possible in practice. And yet: be aware that it is only a theoretical model. However, the practice will be different because it has many other influences and not just those directly related to training.

Exertion/training stimulus (1) leads to fatigue (2), i.e. the energy stores are emptied, the nerve-muscle system is fatigued and you become mentally tired. Recovery (3) through sleep, good nutrition, running, gentle stretching, massage, sun etc. leads to an increase in performance (4).



As already mentioned, the body (our organism) needs an unusual stimulus (stress) in order to be able to change. Every stimulus during a training session causes us to feel more or less exhausted, the body is tired. This fatigue can be attributed to the consumption of energy reserves or to fatigue or the interaction of nerves and muscles. Immediately after the training session, the body begins to regenerate. We consume food to replenish empty energy stores and need deep and solid sleep to regain our strength without stress. Every training session, regardless of the area, follows this principle.



The principle of supercompensation works primarily with the knowledge of homeostasis. Supercompensation describes an excessive adaptive reaction of the organism as a result of a stress-induced deviation from homeostasis. The resulting recovery processes improve performance beyond the initial level. The supercompensation phase only occurs as a result of stress after a recovery phase and is reversible in time.

Remember: when a body is stimulated by certain exercises, its homeostasis is disturbed and it becomes tired. During the recovery phase, it regenerates and replenishes its energy stores to above the original level. By increasing the energy stores, the body is able to perform better than during the last training session and an improvement is achieved. This model of energy overcompensation is also known as supercompensation. The energy used is not exactly replenished, but the body builds up a cushion/buffer so that it can cope better with similar stresses. However, this model only applies to the energy store and is not transferable to other systems. If we now train regularly and over a longer period of time in the area of supercompensation, then we also give the body sufficient stimuli and time to change (adapt) biopositively.