

Practical Programming

sufficiently large and cumulative to exceed his highly developed work tolerance.

Stage 3 - Exhaustion. If the stress on the body is too great, either in magnitude or frequency, the body will be unable to adequately adapt and exhaustion will occur. Selye posited that an overwhelming stress of one to three months in duration could cause death. This is an interesting observation if we consider maximal exercise to be an overwhelming stress. In practice, this is most applicable to intermediates and advanced trainees and means that a period of relentless maximal work of four weeks or longer should be avoided. The bottom line is that no one wants to be in Stage 3, which we typically call “overtraining.”

The application of Selye’s theory to exercise training can easily be presented in a graphic or decision tree format (fig. 2-1). Progressive training within the context of the General Adaptation Syndrome requires that an increase in training load be applied as soon as it is apparent that recovery has occurred. Continued use of the initial, adapted-to load will not induce any disruption of homeostasis and therefore cannot lead to further progress. Using the same training load after adaptation has occurred is counter to effective coaching practice if performance or fitness improvement is the goal.

The Single-Factor Model of Training

If a single episode of weight training can disrupt homeostasis in the novice, there is a predictable set of outcomes beyond the simple concept of performance stasis presented in figure 2-1. We can examine this concept in both simple and

A question of balance

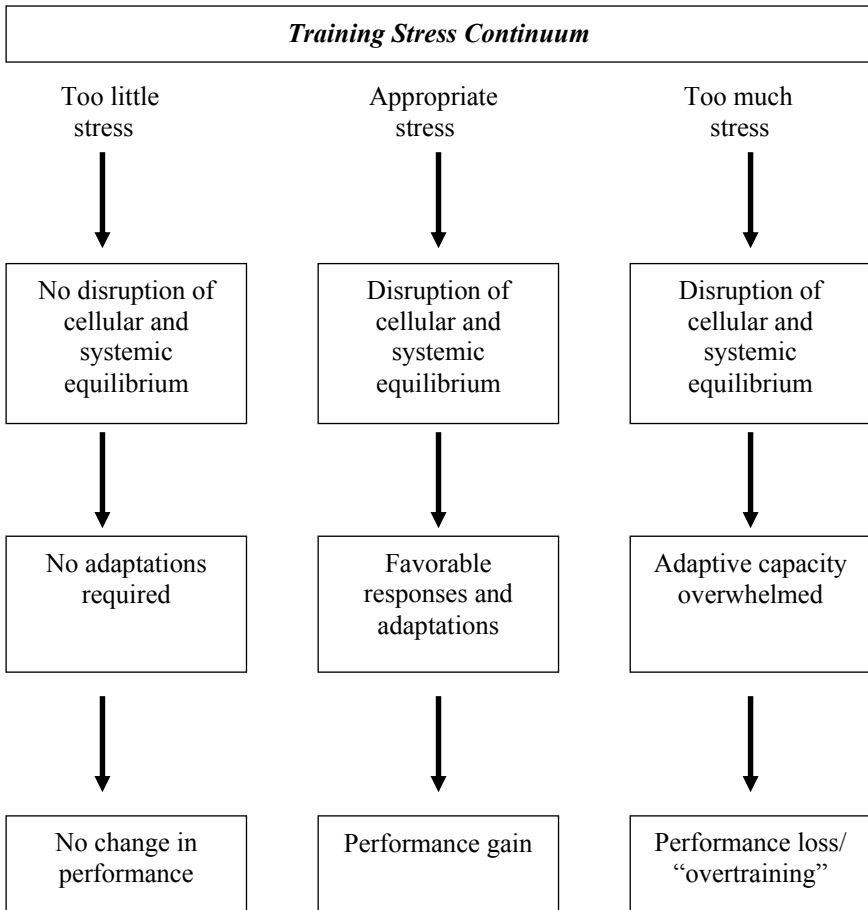


Figure 2-1. Within the parameters of Selye's theory, there are three possible outcome pathways following a training stress: no progress, progress, or loss of progress.

broad terms as it affects a single factor: an individual's ability to lift a weight relative to his single repetition maximum (1RM).

In the novice, a single training session will disrupt biological equilibrium locally within the muscle and systemically within the body. The result of this is a transient and very slight depression of performance. (It is only slight because novice performance levels are already low—as well as

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typically inconsistent—and small losses are hard to measure at this level.) This depression occurs immediately after the training session and represents stage 1 of Selye's theory. In the hours and days after the training session, performance abilities will recover to normal and then performance ability will exceed the pre-stress level. This is **supercompensation**. At this point the trainee has successfully completed Selye's second stage and has adapted to the initial workload (fig. 2-2, line A). It is important to understand that the trainee is not getting stronger during the workout. He is getting stronger during the recovery period *after* the workout. The next logical step is to increase the workload in the following workout—or simple progressive overload. Applying the same workload again produces no progress, since this stress has already been adapted to, but merely reinforces the existing level of fitness. At this point, a small increase in exercise load will once again take the trainee through Selye's stages 1 and 2 to repeat the overload/adaptation cycle at a slightly higher level.

This organization of training can continue for many months, until the trainee's progress plateaus. At this point it is likely that it will require a series of two or three training sessions specifically arranged to have a cumulative effect, plus a longer work/recovery cycle of perhaps a week's duration, to adequately take the trainee through Selye's first two stages. This represents the response of the intermediate trainee (fig. 2-2, line B). The intermediate period of a trainee's career, depending on the purpose of training, can be quite long, possibly years.

As the body gets better at producing force against a load, it is also getting better at recovering from that stress. As both performance competence and recoverability increase with progressive training over time, eventually it will take weeks to adequately disrupt homeostasis to stimulate adaptation, and then another length of time for recovery and