Monitoring Fitness & Performance Part 1: Defining the Terms

with Dr. Chad Anderson

Training monitoring has gained more traction over the last few years and for athletes, this has become part of the training application itself. If done correctly, training monitoring has been shown to help athletes or individuals reach their goals. The days of grinding every day are no longer, and research has shown that overtraining is a massive detriment to athletic or individual improvement.

Numerous tools and measures of load and response are available and we will review a few of them in the next few blog posts. These can be very useful, however, it is essential to remember that load and response should be monitored individually. It is important to keep this in mind as the increased accessibility to tools and technology for monitoring load has also led to poorly applied training decisions that may actually hinder adaptation and performance.

Before we dive into these tools, we must first define a few terms and concepts. To understand how a training goal can be met, we have to first understand the training dose-response relationship. When we train, we apply a certain stimulus to our body and this stimulus disrupts the normal way our body regulates itself on a daily basis, termed homeostasis. The good news is that our body will adapt to this stimulus and not only bring itself back to homeostasis but past the initial baseline. This is where training adaptation happens and the improvement of physical ability. Therefore, the dose-response relationship is the appropriate balance of training stimulus and recovery to improve athletic performance.

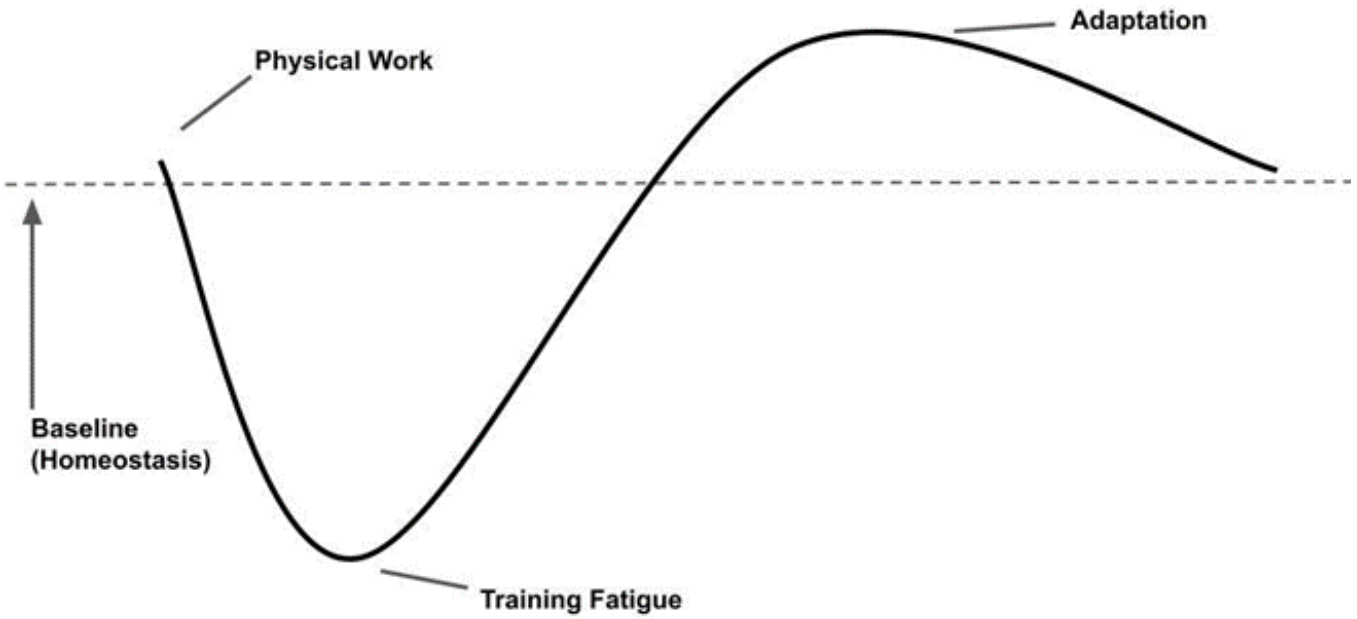

Figure 1: General Adaptation of a response from a stimulus.
Adapted from H Selye, The Stress of Life (London: Longmans Green, 1956).

This hangs solely on the concept that the recovery period is long enough for that adaptation. The larger the stimulus, the longer the required recovery. If we do not meet the required recovery before we add another stimulus, then we end up in training fatigue and we do not gain that training adaptation we strive for.

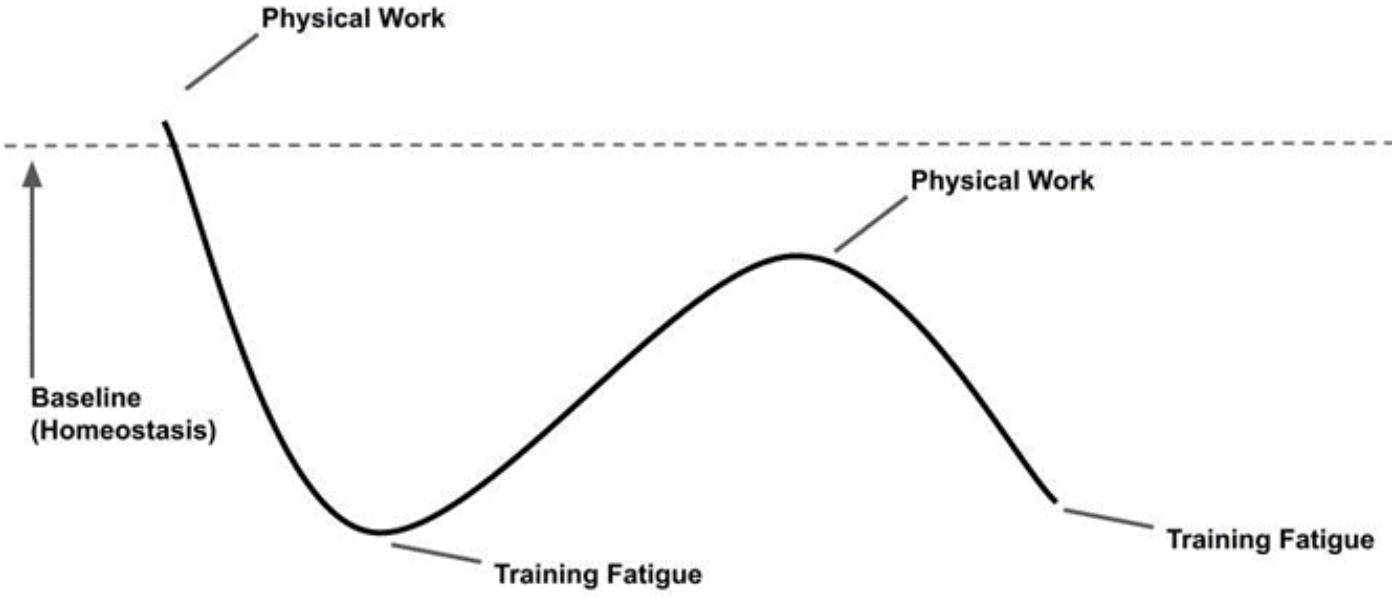

Figure 2: Maladaptive training due to insufficient recovery following a stimulus.
Adapted from H Selye, The Stress of Life (London: Longmans Green, 1956).

A stimulus can be defined as an external or internal load. External load is the quantification of volume and intensity during training sessions and competitions. Examples of external load include weight lifted, kilometres ran, or distance travelled in a competition. Internal load is the response to the external load. Internal load is dependent on nutrition, genetics, stress, and training status. When considering a stimulus, an internal and an external load can create the same disruption in homeostasis. For example, a training session and lousy sleep can dip into training fatigue. If we compound these stimuli then we would need further recovery in order to create that training adaptation. If not, we stay in training fatigue. Keep this in mind when you are planning out your next training session.

Our next few posts will dive into how to measure external and internal load and the application to your specific individualized needs.

References

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