

Obeying the Law of Gravity

What Happens When You Take Time Off

By Pete Pfitzinger

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Please answer the following question: When you take a break from training, your body starts to turn to mush: a) after a few months; b) after a few weeks; c) after a few days; or d) almost immediately. Most runners apparently believe the correct answer is (d), and that the fitness gains of years of running are in danger of quickly vanishing into thin air. This behavior is manifested in phenomena such as running streaks, double workouts, and a propensity to run through such potentially life-threatening conditions as blizzards, electrical storms and bronchitis.

The good news is that the rate at which detraining occurs is slower than you may think. In fact, most elements of your fitness go down at about the same rate at which they go up. Let's take a look at the evidence concerning how long it takes physiological improvements to be lost and running performance to go down the tubes when you are forced to stay off the road due to illness or injury, or (now here's a novel concept) when you take a planned break from training.

A surprisingly large number of scientific studies have been conducted on detraining, and although not all results are in agreement, the evidence is reasonably consistent. The journals *Medicine and Science in Sports & Exercise* and *Sports Medicine* recently published reviews of over 60 detraining studies which provide insight into how quickly you can expect to lose your hardwon adaptations to training.

The table below summarizes some of the physiological adaptations that occur during a two to four week break from training. Your V02 max will decrease by up to 10%, primarily due to a reduction in your blood volume. One of the adaptations to endurance exercise is an increase in blood volume, and when you stop training this adaptation is lost relatively quickly. When your blood volume decreases, less blood returns to your heart to be pumped with each heart beat. This means that your stroke volume (the amount of blood pumped per heart beat) decreases. Your heart rate must increase.

therefore, in order for you to run at the same pace as before.

Other effects of detraining include a loss of flexibility, a decrease in your lactate threshold pace, and large reductions in your muscle glycogen concentration and aerobic enzyme activity. Interestingly, the fitter you are, the greater these losses tend to be.

Physiological effects of 2-4 weeks of detraining,

VO2 max Decreases 4-10%

Blood volume/Heart rate Increases 5-10%

Stroke volume Decreases 6-12%

Flexibility Decreases

Lactate threshold Decreases

Muscle glycogen levels Decreases 20-30%

Aerobic enzyme activity Decreases

Running economy Unchanged

All of the above are key factors in an athletes running performance

 **WHAT HAPPENS TO YOUR RUNNING PERFORMANCE?**

Endurance performance tends to remain the same or actually improve after a few days without training. This is not surprising because when you are in hard training you are perpetually fatigued, so a short break allows your body to recover and adapt to your previous training. Between one and two weeks off from training, however, the benefits of recovery start to become outweighed by a loss in fitness. Although not many studies have measured loss of performance in runners after several weeks of detraining (would you volunteer?), performance is likely to decrease by about 3-5% after three to four weeks of detraining. A 40-minute 10K runner could expect to slow down by about one to two minutes after a three week break.

 **WHAT IF YOU JUST REDUCE YOUR TRAINING?**

If you cut back the volume of your training (i.e. how often you train or how far you run), you can maintain your fitness level for a surprisingly long time. Studies have found that when either the frequency or duration of training are reduced (while the intensity of training is maintained) that aerobic conditioning is maintained for up to 15 weeks. When the intensity of training is reduced (while the volume of training is maintained), however, then aerobic fitness declines more quickly. If you must reduce your training

volume, therefore, maintaining your training intensity is the key to maintaining your running performance.

Similarly, if you are injured, you can maintain a reasonably high level of aerobic conditioning by cross-training hard several times per week. The closer that your cross-training activity simulates running, the more slowly you will lose your running fitness.

ON THE ROAD AGAIN

When you start running again, you can expect your fitness level to go back up at about the same rate at which it went down. Of course, if you have been injured, the increase in your training will be dictated by the recovery of your injury, if you haven't run for two weeks or more, during your first run back you will likely feel as though you have never run before. It just takes a couple of runs for your various body parts to become reacquainted, and by your third run you should feel almost normal. After a week or so back on the road your blood volume will be increasing, and you will be regaining all of the other fitness factors that will allow you to regain your running performance.