**The Supercompensation Principle**

The process by which the human body increases its maximum physical capability is known as supercompensation. Essentially, the introduction of any stimulus to the body – whether it be distance running, sprinting, weight lifting, etc – causes the energy systems and muscle fibers used in that workout to fatigue and break down. The body then rebuilds that damage to be slightly stronger and more efficient than before. However, there are several important things to keep in mind with this training:

* The body needs time to recover from these stimuli, and different energy systems/muscle fibers have different recovery periods. For example, replenishing phosphocreatine levels only takes a few minutes, replenishing glycogen stores in the muscles takes about 24 hours, and fully flushing lactic acid from the body can take 2-3 days. Insufficient recovery will make it impossible to improve and will actually reduce your maximum capability.
* It is possible to do several very hard workouts in short succession as long as the systems being targeted by each workout do not overlap. However, avoiding overlap is more difficult than it might appear.
* If the introduced stimuli are too intense, the body will take even longer to repair the damage, and that increased recovery time might negate any training benefits of the initial workout.
* Remember: a workout does not, by itself, improve athletic performance unless adequate recovery is taken after the workout (in other words, a workout doesn’t end when you finish your last rep, but continues until your body has fully recovered from the introduced stimuli)
* Inversely, going for too long in between introducing stimuli will result in your fitness sliding back to its original level.

