

Newsletter

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Regenerate: Your Job Isn't Over When The Workout Ends

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Recovery is an aspect of training that is getting significant attention right now because research is revealing the various techniques you can use between workouts that will have an important effect on your response to training. By understanding and applying the science of recovery and regeneration, you can plan effectively to ensure that you give your body the help it needs to repair, heal, and grow. This is the key to becoming "the 24 hour athlete."

Recovery and Regeneration

The essential idea that every 24 hour athlete needs to embrace is that your attention and effort do not end when your workout is over. Because the healing and repair process is as important, if not more important, to your fitness as the actual running training, there are several things you can do when you are not pounding the pavement. In effect, fitness and training are a way of life – not just something you do when your stopwatch is running.

The first stage of an effective recovery is a proper cool down, which I prefer to call "active recovery." By staying in motion at roughly 50-55% of your maximum level of exertion for a period of time after your workout – typically 10-15 minutes – you help your body remove metabolic waste products such as acids and potassium that have built up in our muscles and blood during your run. Low intensity exercise helps to increase circulation to your muscles. This is important because the longer acids and other metabolites like lactic acid (or lactate and hydrogen ions) are in your muscle fibres, the less time your body has available to work on rebuilding your muscle glycogen stores.¹ If your mitochondria are battling with waste products and processing lactate, they are spending less time converting glucose into the glycogen you will need for your next run.

Inflammation and Regeneration

A critical phase of the recovery process is the inflammatory response that occurs as a result of exercise and training. When muscle fibres are damaged, inflammatory cells called neutrophils and macrophages move to the area and help break down and remove damaged tissue. The inflammatory process in the muscle also involves increased flow of fluids to the exercised areas, which can cause swelling and soreness. Another key step in the inflammatory process is that our body produces a powerful hormone called insulin-like growth factor-1 (IGF-1). This hormone instructs satellite cells to initiate repairs to damaged muscle fibres and begin producing new ones. This is an example of the intra-muscular response that takes place after a resistance training workout in the gym, or a hills or interval running session. The inflammatory process can take up to 72 hours to complete, so you have to make sure that you mix your hard workout days with easier training to give your body the time it needs to repair muscles and for the inflammatory response to work its magic.

Inflammation is a critical healing process, and if you interfere with it you can limit your physiological progress as an athlete. Anti-inflammation techniques like anti-inflammatory medicines (non-steroidal anti-inflammatories or NSAIDS), cold tubs which constrict blood vessels, or compression clothing are gaining popularity because they may reduce post-workout soreness and pain but may actually slow your progress because they block or impair the inflammation process that signals the body to rebuild itself in response to the training stress. Your body needs the process of breaking down, experiencing

inflammation, and making the repairs in order to develop and improve! That said, compression clothing and cold baths can be useful as you approach a race to decrease pain and to blunt the inflammatory response when you are not in the development phase of your training. They can also be helpful if you are planning 2 workouts on the same day, or if you are planning on 2 hard training days back-to-back. I know this is complicated so work with your coach to determine when it's best for you to use, or not use techniques that "speed" recovery from intense exercise.

Improve Your Performance

Here are some keys to using regeneration to become a 24 hour athlete:

- Cool down for 10-15 minutes after you work out
- Let your body's natural inflammatory response occur during your training phases so that you can maximize regeneration
- Use recovery techniques strategically, not all the time

It is a mental shift to think of recovery as an active process, which is why so many of us don't do it properly. Taking care of your body requires that you commit to being a 24 hour athlete and that you put as much effort into helping your body adapt between workouts as you do in the training sessions themselves.

References:

1. Vescovi J, Falenchuk O, Wells, GD. Blood lactate concentration and clearance in elite swimmers during competition. *Int J Sports Physiol Perform*. 2011 Mar;6(1):106-17.