STRESS THE SYSTEM THEN REST THE SYSTEM

Simply put the body breaks down in training and rebuilds during rest; without rest, it never gets stronger.

> **Greg McMillan @GregMcMillan** Jan 15
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> *Successful athletes place equal importance on the stress & rest parts of the training equation. You should too.*
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> ***Stress + rest = progress***

Most athletes know that getting enough rest after exercise is essential to high-level performance, but we still over train and feel guilty when they take a day off. We are constantly reminded that the body repairs and strengthens itself in the time between workouts, and continuous training can actually weaken the strongest athletes (this is my new excuse). Rest days are critical to sports performance for a variety of reasons. Some are physiological and some are psychological. Rest is physically necessary so that the muscles can repair, rebuild and strengthen. For us mortal recreational athletes, building in rest days can help us to maintain a balance between home, work and training. We should therefore always schedule our rest days first, and build our activities around the rest periods. Novice athletes often start by alternating training days with rest days. Intermediate and advanced athletes should have a minimum of one rest day per or full day of training a week. Activities, such as a lower intensity swim or water run, can also be a part of recovery.

WHAT HAPPENS DURING RECOVERY?

Building recovery time into any training program is important because this is the time that the body adapts to the stress of exercise and the real training effect takes place.

Recovery also allows the body to replenish energy stores and repair damaged tissues. Exercise or any other physical work causes changes in the body such as muscle tissue breakdown and the depletion of energy stores (muscle glycogen) as well as fluid loss.

Recovery time allows these stores to be replenished and allows tissue repair to occur. Without sufficient time to repair and replenish, the body will continue to breakdown from intensive exercise. Symptoms of overtraining often occur from a lack of recovery time. Signs of overtraining include a feeling of general malaise, staleness, depression, decreased sports performance and increased risk of injury, among others.

SHORT AND LONG-TERM RECOVERY

Keep in mind that there are two categories of recovery. There is immediate (short-term) recovery from a particularly intense training session or event, and there is the long-term recovery that needs to be build into a year-round training schedule. Both are important for optimal sports performance.

Short-term recovery, sometimes called active recovery occurs in the hours immediately after intense exercise. Active recovery refers to engaging in low-intensity exercise after workouts during both the cool-down phase immediately after a hard effort or workout as well as during the days following the workout. Both types of active recovery are linked to performance benefits.

Another major focus of recovery immediately following exercise has to do with replenishing energy stores and fluids lost during exercise and optimizing protein synthesis (the process of increasing the protein content of muscle cells, preventing muscle breakdown and increasing muscle size) by eating the right foods in the post-exercise meal.

This is also the time for soft tissue (muscles, tendons, ligaments) repair and the removal of chemicals that build up as a result of cell activity during exercise. Getting quality sleep is also an important part of short-term recovery. Make should to get plenty of sleep, especially if you are doing hard training.

Long-term recovery techniques refer to those that are built in to a seasonal training program. Most well-designed training schedules will include recovery days and or weeks that are built into an annual training plan (ATP). This is also the reason athletes and coaches change their training program throughout the year, adding cross training, modifying workouts types, and making changes in intensity, time, distance and all the other training variables.

Brett Sutton @trisutto · Jan 15

Rest is the most important ingredient for long term performance. ***#itstraining.***

ADAPTATION TO EXERCISE

The Principle of Adaptation states that when we undergo the stress of physical exercise, our body adapts and becomes more efficient. It's just like learning any new skill; at first it's difficult, but over time it becomes second-nature. Once you adapt to a given stress, you require additional stress to continue to make progress.

There are limits to how much stress the body can tolerate before it breaks down and risks injury. Doing too much work too quickly will result in injury or muscle damage, but doing too little, too slowly will not result in any improvement. This is why coaches set up specific training programs that increase time and intensity at a planned rate and allow rest days throughout the program.

SLEEP DEPRIVATION

In general, one or two nights of poor or little sleep won't have much impact on performance, but consistently getting inadequate sleep can result in subtle changes in hormone levels, particularly those related to stress, muscle recovery and mood. While no one completely understands the complexities of sleep, some brainy researchers indicate that sleep deprivation can lead to increased levels of cortisol, decreased activity of human growth hormone (which is active during tissue repair), and decreased glycogen synthesis. Other studies link sleep deprivation with decreased aerobic endurance.

Researchers speculate that deep sleep helps improve athletic performance because this is the time when growth hormone is released. Growth hormone stimulates muscle growth and repair, bone building and fat burning, and helps athletes recover. Studies show that sleep deprivation slows the release of growth hormone. Sleep is also necessary for learning a new skill, so this phase of sleep may be critical for some athletes.

BALANCE EXERCISE WITH REST AND RECOVERY.

It is the alternation of adaptation and recovery that takes the athlete to a higher level of fitness. High-level athletes need to realize that the greater the training intensity, the greater the need for planned recovery. Monitoring your diary workouts and nutrition, and paying attention to how your body feels and how motivated you are is extremely helpful in determining your recovery needs and will help modify your training program accordingly.

STRESS THE SYSTEM THEN REST THE SYSTEM

There are many customs based on the collective experience of generations of multi-sport athletes across the world. The most professional and high-level competitive athletes rest two to four weeks after completing a training cycle. I have also heard that some runners will rest for the number of days they raced in miles. I am not sure, but whilst on my level 3 course the tutor Simon Ward had a mantra **"Rest is Best"**. I think I can go one better. **"Stress the system then rest the system"**

Overtraining frequently occurs in athletes who are training for competition or a specific event and train beyond the body's ability to recover. As athletes we often exercise longer and harder in order to improve. But without adequate rest and recovery, these training regimens can backfire, and actually decrease our performance.

Conditioning requires a balance between overload and recovery. Too much overload and/or too little recovery may result in both physical and psychology symptoms of overtraining.

COMMON WARNING SIGNS AND SYMPTOMS OF OVERTRAINING

- Washed-out feeling, tired, drained, lack of energy
- Mild leg soreness, general aches and pains
- Pain in muscles and joints
- Sudden drop in performance
- Insomnia
- Headaches
- Decreased immunity (increased number of colds, and sore throats)
- Decrease in training capacity / intensity
- Moodiness and irritability
- Depression
- Loss of enthusiasm for the sport
- Decreased appetite
- Increased incidence of injuries.
- A compulsive need to exercise

RECOGNIZING OVERTRAINING

There are several ways you can objectively measure some signs of overtraining. One is by documenting your heart rates over time. Track your aerobic heart rate at a specific exercise intensities and speed throughout your training and write it down. If your pace starts to slow, your resting heart rate increases and you experience other symptoms, you may be heading into overtraining territory.

You can also track your resting heart rate each morning. Any marked increase from the norm may indicate that you aren't fully recovered.

Another way to test recover to use something called the orthostatic heart rate test, developed by Heikki Rusko while working with cross country skiers.

Including notes in your training diary about how you are feeling each day can help you and your coach notice downward trends and decreased enthusiasm. It's important to listen to your body signals and rest when you feel tired. You can also ask those around you if they think you are exercising too much.

Any change may indicate that **you have not recovered** from a previous workout, are fatigued, or otherwise stressed and it may be helpful to reduce training or rest another day before performing another workout.

Orthostatic heart rate test

- Lay down and rest comfortably for 10 minutes the same time each day (morning is best).At the end of 10 minutes, record your heart rate in beats per minute.
- Then stand up
- After 15 seconds, take a second heart rate in beats per minute.
- After 90 seconds, take a third heart rate in beats per minute.
- After 120 seconds, take a fourth heart rate in beats per minute.

Well rested athletes will show a consistent heart rate between measurements, but Rusko found a marked increase (10 beats/minutes or more) in the 120 second-post-standing measurement of athletes on the verge of overtraining.

While there are many proposed ways to objectively test for overtraining, the most accurate and sensitive measurements are psychological signs and symptoms and changes in an athlete's mental state. Decreased positive feelings for sports and increased negative feelings, such as depression, anger, fatigue, and irritability often appear after a few days of intensive overtraining. Studies have found increased ratings of perceived exertion during exercise after only three days of overload.

HOW TO PREVENT OVERTRAINING

It's often hard to predict overtraining because every athlete responds differently to certain training routines. It is important, however, to vary training through the year and schedule in significant rest time. If you recognize any warning signs of overtraining, it's important to objectively measure your training routine and make adjustments before you wind up sick or injured.

HOW TO TREAT OVERTRAINING

If you suspect you are overtraining, start with the following:

- Rest and Recover. Reduce or stop exercise and allow yourself a few days of rest.
- Hydrate, Drink plenty of fluids and alter your diet if necessary.
- Get a sports massage. This may help relax you mentally and physically.
- Begin Cross Training. This often helps athletes who are overworking certain muscles or suffering from mental fatigue.

Research on overtraining shows getting adequate rest is the primary treatment plan. New evidence indicating that low levels of exercise, or active recovery, during the rest period speeds recovery, and Moderate exercise increases immunity. Total recovery from overtraining can take several weeks and should include proper nutrition and stress reduction.

AIDING YOUR BODY'S RECOVERY

It is therefore of vital importance to give your body time to recover, as well as to get sufficient nutrition. Lean red meat, chicken and fish are all rich sources of protein. Vegetarians should eat plenty of beans, lentils, nuts, quinoa, tempeh or tofu.

The ideal amount of rest or recovery varies from person to person, just as some people need more sleep than others. In general, however, scientists at the ASICS Institute of Sport Science advise runners to take at least one day of total rest per week. They also advise everyone to avoid doing any intensive sport activities on designated Rest days. This ensures that by the next training session you are fully recovered and have given your body to overcompensate.

REST

In sum, the effect of your training depends on rest. To ensure you get enough rest and allow your body to benefit from overcompensation, make sure you take a day of complete rest at least once a week.

- Vary your training over the week, avoiding two consecutive days of hard training and have a week of light training every two to three weeks
- Stay off your legs all you can,
- Watch nutrition closely (healthy carbs, lean protein, and good fats), eat enough protein to help re-build damaged tissue.
- Stretch,
- Drink plenty especially when thirsty.

Other common recovery aids include massage, napping, elevating legs, floating in water, and listening to music.

ACTIVELY FOCUS ON YOUR RECOVERY.