



— The Physical Therapy Advisor's Guide to —

# PREVENTING AND TREATING OVERTRAINING SYNDROME

*Including Tips and Tactics to Successfully Overreach*

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## Introduction

If you exercise or participate in any sport, then you have likely had some experience with overtraining syndrome (OTS). It usually starts with extra muscle soreness, a feeling of fatigue, and losing the desire to continue to exercise and compete. These initial symptoms can quickly morph into a serious case of overtraining syndrome. Overtraining can occur when the intensity and/or volume of exercise becomes too much for the body to properly recover from.

Overtraining syndrome can result in a loss of performance. Worse yet, it can lead to illness, injury, and the loss of training days, weeks or months. It can completely derail you from meeting your goals.

Although not well understood (yet), research indicates there are two forms of OTS. One affects the sympathetic nervous system (SNS). The other primarily affects the parasympathetic nervous (PNS). **Sympathetic OTS** tends to affect sprint or power athletes. The resting heart rate tends to be elevated in the sympathetic form. **Parasympathetic OTS** tends to affect endurance athletes. In the parasympathetic form, the heart rate is even more decreased which causes an even lower heart rate than typically found in endurance athletes.

This guide is designed to help you understand the risk factors and symptoms of OTS. Once you understand your risk factors, then you can take preventative measures to avoid developing OTS. In order to continue training hard, you must prevent OTS and the associated poor performance, illness, and injury risk that can result in lost training days and opportunity.

The **Treatment** part of this guide will help those of you who have trained and pushed it a little too hard recover quickly so you can get back on track with your training protocol.

I will also address how to utilize prevention strategies to help you develop a personal training strategy that will allow you to push past your limits and prior plateau points in order to reach a state of what is known as **overreaching** (your body's ability to "supercompensate"). This will speed up your results, so that you can train harder and more effectively than ever before!

Throughout this guide, I reference products, software, supplements, topical agents, and web sites that I personally use and recommend to my family, friends, clients, and patients (for use in the clinical setting). For your reference and convenience, please refer to the **Resource Guide**.

## Overtraining – Prevention

The diagnosis for overtraining syndrome (OTS) is usually determined when a number of factors or symptoms begin to manifest since there isn't a specific medical test that can diagnosis the condition. It's critical to be able to recognize the warning signs, so that you can take preventative measures to avoid developing OTS.

### **Warning Signs** (*symptoms can range from mild to severe*)

- Fatigue (mild to severe).
- Muscle and body achiness and soreness.
- A sudden drop in performance.
- A drop in strength.
- A drop in cardiovascular endurance.
- Insomnia or excessive sleepiness.
- Headache.
- Illness due to a drop in your immune function.
- Irritability and moodiness.
- Decreased appetite or weight loss.
- An increase in your resting heart rate.
- A decrease in your heart rate variability.
- A substantial drop in training capacity and/or intensity.
- Depression and a loss of enthusiasm for activities (such as training).

Avoiding OTS is crucial (particularly, if you want to effectively train at a high level). ***It not only impedes your immediate performance, but it also substantially increases your risk of injury.***

Recovery from a workout is a critical component in avoiding OTS. Your body repairs, grows, and adapts (improves) from your training during your recovery time. Nearly every elite athlete (particularly, an older one) focuses as much time on a recovery protocol as on his/her training. ***Your recovery routine should be an intentional and a multifaceted approach.*** Your recovery protocol is arguably equally important with your actual training program.



## Prevention Strategies

- **Keep a training diary.** An exercise or training diary allows you to keep track of how you feel before, during, and after workouts. How did your body respond to training that day? How did you sleep? How was your food intake and nutrition? Also, record your heart rate response during your exercise session. Document as many variables as you can in order to look for patterns. Discover which combinations and strategies work well for you and those that have a negative effect on training. ***Focus on the positive and eliminate variables which cause negative effects.*** The diary helps you to keep track of it all, but only if you actually use it and refer back to it. There are software programs available to assist in this as well. One such program popular with cyclists and triathletes is called **Training Peaks**.
- **Monitor heart rate variability.** Another potential warning factor for overtraining syndrome is heart rate variability (HRV). It is simply the variation in the time interval between heartbeats. HRV is affected by stress, hormone changes, and changes in the sympathetic or parasympathetic system. A decrease in parasympathetic activity or increased sympathetic activity will result in reduced HRV. A reduced HRV is a sign of OTS. The higher the HRV, the more capable your nervous system is able to adapt to stress. Many different apps can quickly measure HRV. Some apps are more accurate than others. The more accurate and precise the measurement, the more expensive the app. One free app that I use and recommend is Azumio's **Instant Heart Rate**.
- **Monitor for OTS warning signs.** Watch for the warning signs (*listed above*) and decrease your training volume if you are experiencing symptoms. For example, use HRV and sleep quality as a marker of OTS. Adjust your training and recovery protocol if either your HRV or quality of sleep exceeds your parameters of normal. Be proactive, and listen to your body. It's better to take a rest day than to risk injury and illness and miss multiple days or weeks.
- **Cool down.** After performing your exercises, take the extra time to cool down and stretch. Choose exercises and activities that provide range of motion (ROM) to the particular area that you just trained or used. The perfect time to perform static stretching is after exercising. Work on tight and restricted areas. This is also the best time to focus (spot train) any problem areas.

For example, if you are experiencing low back pain (LBP) or are prone to LBP, this is the best time to implement additional stretches and exercises as part of your prevention and/or treatment. Keep moving throughout the day, and avoid sitting for extended periods of time. A proper cool down should be a critical component to your recovery protocol.

- **Foam rolling.** The foam roller is a wonderful tool which allows you to manipulate the body's soft tissues. This has a potential positive effect on the fascial system, the musculotendinous system, and the circulatory system. It can aid in recovery by improving blood flow and reducing myofascial restrictions. To learn how to use a foam roller for self-treatment, please refer to **Foam Roller Stretches and Mobilizations**.



- **Active recovery.** Every day shouldn't be an intense training day. As part of your training cycles, be sure to include time to participate in other activities to help the body to recover and rejuvenate. Participate in a yoga class, take a leisurely bike ride, play in the pool or take a walk in the park. ***This is different from true cross training as the purpose is to have fun and keep active.*** Cross training should definitely be a part of your training protocol. It also should be specific and help you focus on the areas that need more attention (strength or recovery). Have fun!



- **Cross train.** Cross training is a method to limit your risk of injury and to work with different activities that ultimately will help your performance. Utilize cross training as a tool. Focus on areas of your training that need a little more attention. This may include addressing areas that are chronically weak or often sore or injured. Use it to stimulate the body and to keep training fun and more enjoyable.

For instance, a runner may enjoy practicing yoga or participating in CrossFit one or two days a week in addition to running. Cross training should always have a purpose and be specific. It should be implemented as part of the larger training and periodization schedule. (It's different than active recovery.) This is an opportunity to target weak or problem areas or an opportunity to spot train as long as it is different than your other training activities. The body and nervous system like variety. This is the time to mix it up and keep it fresh.



- **Proper periodization.** You cannot and should not train at a super high intensity all year long. Nor should you race every weekend or compete in your event every weekend. If you desire to peak and perform your best, your work volume needs to be properly periodized. Well-balanced gradual increases in training are recommended.

Be sure that your training plan varies the training load in cycles with built in mandatory rest phases throughout the year. The plan needs to be based on when you need to peak for certain events or races. During the high workload phase, try to alternate between high intensity interval work and low intensity endurance work. Certain cycles may emphasize strength versus intensity versus power. It all depends on your training goals.

If you are a multi-sport athlete, then you need to insure you peak at the right time for each sport. Just as important, you need mandatory rest cycles. Proper periodization is difficult and individual. Work with your coaches to design the best plan for you. Although it can be tricky to get it right, a well-balanced training plan is critical to long term success (including avoiding injury).

- **Taper up the training volume appropriately.** The 10 Percent Rule is a guideline that many fitness experts use to help athletes (of all levels) avoid injury while improving performance. Many cases of OTS can be attributed to increasing the intensity, time or type of activity too quickly. The 10 Percent Rule sets a weekly limit on training increases. The guideline indicates not to increase your activity more than 10 percent per week. That includes distance, intensity, amount of weight lifted, and/or time of exercise.

For example, if you are running 30 miles per week and want to increase the distance, add 3 miles during the next week for a total of 33 miles a week. If you are squatting 200 pounds and want to increase that amount, don't add more than 20 pounds during the next week. The 10 Percent Rule is only a guideline. In some cases, 10 percent may be too much. Instead, a 5 percent increase per week may be much more realistic.

- **Breathe!** Spend time focusing on your breathing. There are many different forms of breath work, but in my experience, just drawing attention to your breathing is an excellent place to start. Deep diaphragmatic breathing has been shown to: reduce stress levels; improve hormone levels; improve sleep quality; reduce blood pressure; and improve performance. Your body doesn't know the difference between good or bad stress. It could be stress from a hard work out or stress from a terrible tragedy. It's important to work on everything you can to improve your stress levels and optimize hormonal levels. Spend time daily working on deep breathing. For an excellent resource on breathing techniques, please refer to Dan Brulé's **Breath Mastery**.
- **Rest more.** Your body must rest in order to grow and develop. Training every day is not the best way to improve. It can lead to injury and burn out. Take a rest day and have fun. Sleep more. Proper programming includes mini cycles with an off season as well as active rest cycles in between heavy load and heavy volume training cycles. The harder you train the more rest you need. ***Don't fear rest, embrace it!***
- **Eat healthy.** Your body tissue needs nutrients to be able to perform at a high level. ***Eat for performance.*** Your food is your fuel, and the old adage is true. You are what you eat. Avoid processed food as much as possible. ***Whenever possible, eat nutrient rich foods.*** No empty calories. Limit sugary food and add more healthy protein and healthy fat in your diet. Maintaining a diet with adequate healthy fats is essential in providing the nutrients to support all hormone function in the body as well as support the brain and nervous system. Adequate protein intake is necessary to support muscle health and development.

Although there are different methods to calculate protein needs, the following is the most common. The standard minimum amount of daily protein needed is .37 grams per pound of body weight (or .8 grams per kilogram of body weight). This is the bare minimum. Research has shown between 1.2 and 1.8 grams of protein per kilogram of body weight (approximately .5-.8 grams per pound) is important to maximize health and for athletes. (Use 2.2 lbs. divided by your body weight to calculate kilograms). Other methods recommend even more protein, but I'm not convinced it is necessary.

*Please see the following examples for the average male and female. Then enter your own weight to determine the recommended amount of protein per day.*

**Male, 180 lbs.** 180 lbs. / 2.2 = approximately 82 kilograms. 82 kg. x 1.2 = 98 grams. 82 kg. x 1.8 = 148 grams. The range is from 98 to 148 grams of protein per day.

**Female, 130 lbs.** 130 lbs. / 2.2 = approximately 59 kilograms. 59 kg. x 1.2 = 71 grams. 59 kg. x 1.8 = 106 grams. The range is from 71 grams to 106 grams of protein per day.

- **Stay hydrated.** The human body is primarily made of water, which is critical for all body functions. Adequate water intake is critical to avoid dehydration which can negatively affect your training. Dehydrated tissues are prone to injury as they struggle to gain needed nutrients to heal and repair. Dehydrated tissues are less flexible and tend to accumulate waste products. Stay hydrated by drinking water.

Try to avoid beverages that contain artificial sweeteners or chemicals with names you can't spell or pronounce. Also, be careful to not drink high sugar containing drinks such as soda and fruit drinks. Try squeezing a little lemon juice or adding a sliced cucumber to water for flavor. Coconut water is also an excellent source of hydration. Not only can increase fluid intake to remain hydrated, but you can also re-hydrate through your food choices. Choose foods with high water content which typically means more vegetables. Fruits can be good choices, too, but always eat more vegetables than fruits.

- **Supplement.** I take certain supplements during times of heavy training volume or when I am in a phase of overreaching. I also take them intermittently to help prevent injury or heal from one. My most recommended supplement is **CapraFlex by Mt. Capra**. Essentially, it combines an organic glucosamine and chondroitin supplement with other natural herbs which are designed to reduce inflammation. CapraFlex can be taken long term or intermittently to help heal from an injury.

I also recommend a colostrum supplement called **CapraColostrum by Mt. Capra**. Colostrum is the first milk produced by female mammals after giving birth. It contains a host of immunoglobulins, anti-microbial peptides, and other growth factors. It's especially good at strengthening the intestinal lining which prevents and heals conditions associated with a leaky gut. Colostrum can also help a person more effectively exercise in hotter conditions. Over all, it can boost the immune system, assist with intestinal issues, and help the body to recover faster.

Both of these supplements can be used in heavy volume or intense training phases to help you to recover faster and avoid OTS.

*(Please consult with your pharmacist and/or physician prior to starting any new supplementation protocol. Herbs could interact with some medications particularly if you are taking blood thinners.)*



If you begin to experience any of the warning signs of OTS, be proactive about modifying your training. It's important to objectively measure your training routine and make adjustments before you become sick, overtrained or injured. Missed training days are missed opportunities. Stay healthy and strong in order to meet your goals. Implement these recommended prevention strategies to help keep your training at a high level. ***Your recovery routine should be an intentional and a multifaceted approach.***

If you are experiencing chronic aches or pain or are struggling with an aspect of your training, seek help immediately. Seeking advice specifically from an experienced coach, physical therapist, or physician can be beneficial. **The American Physical Therapy Association** offers a wonderful resource to help find a physical therapist in your area. In most states, you can seek physical therapy advice without a medical doctor's referral (although it may be a good idea to seek your physician's opinion as well). The ultimate goal is to stay healthy so you can meet your goals!

## Overtraining – Treatment

Overtraining syndrome (OTS) can affect any athlete in any sport or at any level. I have treated and worked with high school athletes to weekend warriors who suffered from OTS. Recently I have noticed more cases of OTS among CrossFit enthusiasts and runners of all distances. People are training harder and longer than ever before with wonderful results.

At times, even the best of intentions can lead to not so desirable consequences. OTS usually starts with muscle soreness and a feeling of fatigue. Then it quickly progresses into a case of overtraining syndrome or injury. Overtraining can occur when the intensity and/or volume of exercise becomes too much for the body to properly recover from. It's always best to prevent OTS rather than attempt to recover from it.

Overtraining syndrome will significantly impede your performance and frequently leads to a serious injury or illness. In OTS, your body isn't able to adequately handle or adapt to the high volume and intensity of exercise that you are performing. ***If you develop OTS, you will need to take specific steps to speed up your recovery in order to prevent injury.***

Depending on the duration of symptoms and the severity of the case, OTS is a serious condition which can take a long time to recover from. It should not be taken lightly. It's a potentially serious condition. OTS not only affects the muscular system, but also the circulatory system, the nervous system, and the hormone regulation system. Recognizing the warning signs early and being proactive in prevention will help you to avoid OTS. If you're already suffering, implement as many prevention strategies as you can and use the following tips and strategies in your recovery.

### How to Self-Treat Overtraining Syndrome

- **Rest.** One of the first and primary treatments for OTS is to rest. More rest is required the longer the overtraining has occurred. Therefore, early detection is critical. If the overtraining has only occurred for a short period of time (such as three to four weeks), then a brief three to five days of rest may be sufficient while implementing the other treatment strategies.

After the rest days, you must be slow and deliberate as you slowly taper back into training at a lower training volume until your recovery is complete. Typically in mild cases, the intensity of training can be maintained as long as the volume is decreased. I also advise that you start an alternate day recovery cycle. Train for one day, and then take a day off. This will typically last for a few more weeks before resuming your normal training cycle.

As you resume full training, it's important that the **Warning Signs** of overtraining are identified and corrected. (Please refer to **Overtraining – Prevention.**) In more severe cases, the training program may have to be interrupted for weeks or months for a full recovery.

- **Cross train.** Opt for an alternate form of exercise to help prevent exercise withdrawal syndrome. If you are heavily participating in CrossFit or running, choose leisurely cycling and yoga as part of your cross training routine. *The key is to keep both training volume and intensity low while preserving a baseline of fitness.*

Most of the medical studies on overtraining are geared toward single sport athletes. For triathletes and other multi-sport athletes, the recovery process may be different depending on the circumstances. If you can identify that the overtraining has occurred in only one discipline, then resting from that discipline (as well as significantly decreasing training in the other sports) may result in a full recovery. Don't try to substitute more workouts in one sport in order to compensate for rest in another. This will only worsen the symptoms of OTS, which affects both the parasympathetic (PSN) and sympathetic nervous system (SNS). Resting from overtraining on the bicycle by swimming more will help to rest fatigued quadriceps. *However, stress is stress to the cardiovascular, nervous, and hormone systems.*

Cross training is an important component in your recovery. Implement it in your typical training cycles as a method to limit your risk of injury. Cross training can make training more enjoyable as it keeps your body stimulated and ready for improvement. As you recover from OTS, the volume and intensity must be significantly reduced to allow for adequate rest and recovery.

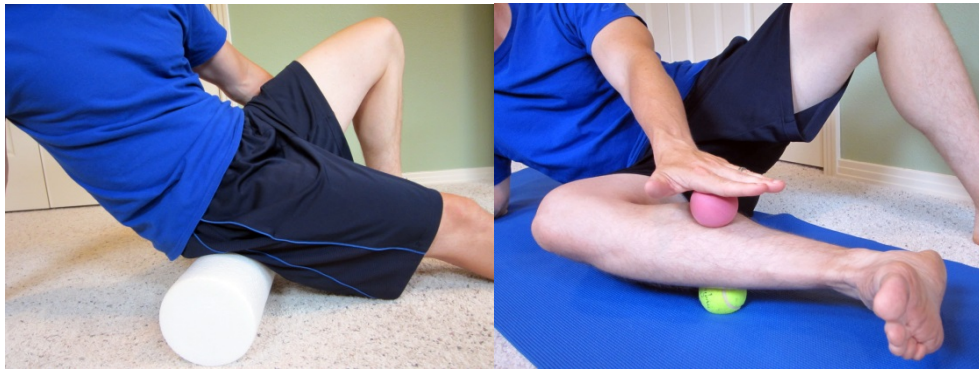


- **Spot train your weak areas.** In addition to cross training, use this recovery time to spot train your weak areas. Work on your mobility and balance as a prevention technique for areas that are prone to injury. If you have a history of low back pain or a prior knee injury, utilize this time to single out all those weak areas in an effort to prevent injury in the future. As you rest from your primary training routine while incorporating cross training, perform spot training as well.

Please refer to [ThePhysicalTherapyAdvisor.com/resource-guide](http://ThePhysicalTherapyAdvisor.com/resource-guide) for my specific exercise section with rehabilitation exercises ranging from low back pain to knee pain. *These free downloadable .pdf files include photos and detailed descriptions to help you get started on spot training your weak areas.*

This is also an excellent time to work on the specific technical skills that your sport requires. It may include learning how to mentally manage your sport better. Utilize this time of rest and recovery wisely so when you return to your sport and activity, you will be better physically and mentally than ever before.

- **Actively manage your aches and pains.** Consider seeing a masseuse for regular body work. Use mobility tools or a foam roller after exercise to speed up recovery times and decrease the risk of muscle soreness or restriction. To learn how to use a foam roller for self-treatment, please refer to **Foam Roller Stretches and Mobilizations**.



- **Acupuncture.** Implementing acupuncture into your recovery process can be very beneficial. Acupuncture can help to address a multitude of conditions which affect the nervous, muscular, and hormonal systems. All three systems should be addressed during the recovery process. Along with many of my clients, I have experienced wonderful results with acupuncture. I highly recommend an acupuncturist who specializes in sports medicine and has experience treating athletes. During acupuncture sessions, you can take time to specifically work on intentional relaxation and meditation, which has the added benefit of addressing the nervous and hormonal systems.
- **Seek help early.** If you are experiencing chronic aches or pain or are struggling with an aspect of your training, seek help immediately. A healthy lifestyle is a lifelong pursuit. If you are injured or not enjoying an activity, you will not stay engaged or motivated in the long term. Seeking advice (specifically from an experienced coach, physical therapist or physician) can be beneficial. This would include designing a new training and periodization schedule to prevent OTS from reoccurring. This will also help you in the long term with your training and competition schedule.

- **Decrease the stimulants.** It's important to take steps to help both the nervous and hormonal system re-regulate and rejuvenate. Often with OTS, the adrenal glands become overtaxed and the level of cortisol (a stress hormone) becomes too high. Intake of stimulants, such as caffeine, tends to worsen the condition. Caffeine can be found in many pre-work out supplements, running gels, soda, coffee, and tea as well as some over the counter (OTC) medications.

During your recovery phase, limiting chemicals that promote stimulation to the nervous and hormonal systems (particularly in regard to cortisol and adrenal function) will speed up your recovery. Once you have recovered and are tapering back into full training, I highly recommend you limit stimulants as a prevention strategy for future episodes of OTS.

If you are feeling the need for stimulants during the day, you may not be getting enough rest or your food choices may be causing feelings of fatigue. Address both your sleep and eating habits first. Likely, you'll find that stimulants aren't necessary during your day and may actually make you feel worse. If you tend to ingest beverages and/or foods that contain stimulants, then limit them to only the morning.

- **Eat healthy.** Eat for performance! Choose only nutrient rich foods. Avoid any and all empty calories except on rare occasions. A healthy diet is critical to avoid injury. Your body tissue needs nutrients to be able to perform at a high level. Avoid processed food as much as possible. Limit sugary food, and add more protein and healthy fat in your diet. Maintaining a diet with adequate healthy fats is essential in providing the nutrients to support all hormone function in the body as well as support the brain and nervous system. In the case of OTS, I encourage that you consume a higher fat diet to help your body's hormonal system to re-regulate. Super greens and coconut oil are always highly recommended.

Most people do not consume enough greens. Green super foods, such as spirulina and wheat grass, are packed high in antioxidants. They can have a cleansing and an alkalizing effect. Super greens boost your immune system and are generally good for you. Super greens should be consumed daily, but it's particularly important to supplement with during times of high stress (including high training stress).

**Amazing Grass Green SuperFood** is easily consumed in a powder form and typically tastes best when mixed in with food. I usually mix it into hot oatmeal or a smoothie. You can also utilize a pill form. **ENERGYbits®** is spirulina algae in a pill form. I have utilized ENERGYbits® as part of a fueling plan for longer runs and activities with great success. I found them to have a blood sugar stabilizing effect while keeping my energy level high. I also recommend **RECOVERYbits®** (chlorella algae) which can aid in recovery by helping to detox your system. Both are packed with nutrients and protein.



**Island Fresh Superior Organic Extra Virgin Coconut Oil** is another option when implementing a higher fat diet. In the morning, I typically mix a protein supplement into my black coffee along with a teaspoon of organic coconut oil, which is full of medium chain triglycerides (MCTs). Coconut oil does not negatively affect cholesterol levels. It has no added flavor. It helps to stabilize my blood sugar and keeps me satiated for hours.

*Coconut oil offers many health benefits including:*

- Helps to stabilize blood sugar.
- Helps to metabolize energy stores more efficiently.
- Reduces the risk of illness and infections.
- Helps to control hunger cravings.
- Reduces the risk of seizures and heart disease.

Adequate protein intake is necessary to support muscle health and development. (Please refer to the **Prevention Strategies** for more information on protein.)

- **Hydrate more frequently.** The human body is primarily made of water, which is critical for all body functions. In the case of OTS, I highly encourage you to hydrate more frequently during recovery. Adequate water intake is critical to avoid dehydration which can negatively affect your training. Dehydrated tissues are prone to injury as they struggle to gain needed nutrients to heal and repair. Dehydrated tissues are less flexible and tend to accumulate waste products. Stay hydrated by drinking water.

Try to avoid beverages that contain artificial sweeteners or chemicals with names you can't spell or pronounce. Coconut water is a popular drink that offers vital nutrients. Also, consider morning smoothies or a juicing to cleanse the kidneys and liver to help detoxify the body. Adding more vegetables to your diet is another way to increase hydration levels.

- **Supplement.** My most recommended supplement to help recover from injury is **CapraFlex by Mt. Capra**. Essentially, it combines an organic glucosamine and chondroitin supplement with other natural herbs which are designed to reduce inflammation. CapraFlex can be taken long term or intermittently.

In the case of OTS, I also recommend a colostrum supplement called **CapraColostrum by Mt. Capra**. Colostrum is the first milk produced by female mammals after giving birth. It contains a host of immunoglobulins, anti-microbial peptides, and other growth factors. It's especially good at strengthening the intestinal lining which prevents and heals conditions associated with a leaky gut. Colostrum can also help a person more effectively exercise in hotter conditions. Over all, it can boost the immune system, assist with intestinal issues, and help the body to recover faster.

Like CapraFlex, **Tissue Rejuvenator by Hammer Nutrition** contains glucosamine and chondroitin as well as a host of herbs, spices, and enzymes to help support tissues and limit inflammation. I recommend taking either CapraFlex **OR** Tissue Rejuvenator. You can take CapraColostrum independently or in conjunction with either CapraFlex or Tissue Rejuvenator.

I recommend taking these supplements as a recovery strategy. I recommend initially trying a 30 day protocol. If the supplements are aiding your recovery, you may choose to continue taking them for an additional 30 days. I implement this protocol as part of a prevention strategy during times of heavy volume or high intensity training.

The ultimate goal of supplementation for treatment of OTS is to provide the body with needed nutrients to heal and to utilize nutrients and herbs that can reduce inflammation within the body. Be sure your body has what it needs to perform in the way you want it to perform.

*(Please consult with your pharmacist and/or physician prior to starting any new supplementation protocol. Herbs could interact with some medications particularly if you are taking blood thinners.)*

- **Other supplements to consider.** When choosing supplements, I tend to gravitate to supplements that can enhance performance, improve recovery, stabilize blood sugar or reduce inflammation. The ultimate goal with supplements is to aid your body in improving health and/or performance. Try to choose the most natural products as possible and experiment to see what works best for you. When treating OTS, the two supplements in particular that I recommend that you consider taking are vitamin D3 and magnesium.

Vitamin D3, such as **Viva Labs Vitamin D3**, is critical to the absorption of calcium through the intestinal wall which is important for bone health. Vitamin D3 is often below optimal levels for most people, including athletes, and it's a vital nutrient for many body functions. Vitamin D3 is also a critical nutrient in maintaining a healthy immune system.

I also use and recommend magnesium as a sleep and recovery aid. I consume it at night to help me sleep. This has been a major benefit for me as it significantly reduces muscle soreness, cramps and/or spasms. It's a critical mineral for proper muscle and nervous system function. You can take **Mag Glycinate** in pill form or by eating foods higher in magnesium such as spinach, artichokes, and dates.

Most people are deficient in the amount of magnesium they consume on a regular basis. I recommend beginning with a dose of 200 mg (before bedtime) and increasing the dose in 100 mg intervals as needed. I would caution you that taking too much

magnesium can lead to diarrhea. Mag Glycinate in its oral form is the most highly absorbable. Although not as absorbable, **Thorne Research Magnesium Citrate** and magnesium oxide can also be beneficial.



*Stay Motivated*

Overtraining syndrome can be dangerous and severely limit your ability to train. It also significantly increases your risk of injury. ***A recovery protocol should include a multifaceted approach that incorporates strategies to positively affect the muscular, nervous, and hormonal systems.***

If you aren't experiencing a positive improvement after implementing these strategies, please seek additional assistance from an experienced coach, physical therapist, or physician. **The American Physical Therapy Association** offers a wonderful resource to help find a physical therapist in your area. In most states, you can seek physical therapy advice without a medical doctor's referral (although it may be a good idea to seek your physician's opinion as well).

***The ultimate goal is to stay healthy so you can meet your goals! Stay motivated!***

## Overreaching – Tips and Tactics

Overreaching is a term used to describe an acute training phase where you temporarily increase the training volume, load and/or intensity as part a specific training strategy to gain a specific training outcome. When properly programmed, overreaching can be an effective and important part of a training cycle.

Unlike overtraining syndrome (OTS), overreaching is an actual training strategy to build strength and/or performance. It typically results in additional fatigue and soreness, but it's easily recovered from with a few days of rest and a specific recovery plan.

Upon resting, the desired outcome is an obvious improvement or “supercompensation” in that specific sport or activity. Overreaching is a training tool and should be part of a training cycle (typically performed prior to an important competition or event). If you overreach all of the time, you will develop OTS.

I consider overreaching to be an important component of high quality training. However, you should be aware of the possibility of developing OTS. ***Overreaching is an advanced training concept and shouldn't be utilized by novice individuals (regardless of the sport or activity).***



### Why risk Overtraining Syndrome (OTS) to implement overreaching into my training?

- Overreaching helps your body to take the extra steps needed to produce results in a shorter period of time.
- Overreaching helps you to “shock” the body in order to see results. During a short period of time (days to weeks), you push yourself to a state of being nearly over trained before backing off. This is more than the typical overload you are attempting to perform in your regular training.
- Supercompensation occurs as you push yourself right up to your limit. Then you pull back from the brink of being over trained before progressing into a rest and recovery phase.

- All quality intermediate to advanced training plans should be using a typical stair step increase in performance with 3-4 intermittent bouts of overreaching throughout a typical periodized training year.

## How to Safely Overreach

***Do not attempt if you are a novice. Overreaching is an advanced technique for intermediate to advanced individuals.***

- A planned and programmed overreaching session should last no longer than 1-2 weeks.
- Increase your training, intensity and/or volume but not more than 40%. For example, if you typically run 50 miles a week, then plan on 1-2 weeks of 70 miles before your scheduled rest and recovery days. You may also choose to combine two harder variables in one training session like the following examples: a long run with challenging hills; a tempo session with speed work; and a long run after performing a high intensity interval training session (HIIT).
- Watch for the following symptoms of overtraining syndrome: becoming fatigued sooner during the workout; excessive fatigue or soreness; changes in appetite (larger or smaller); and longer post workout recovery times. If you begin to experience these initial OTS symptoms, then you are into overreaching and on the verge of overtraining. Depending on how much longer in the phase you need to progress, you may need to discontinue your overreaching training plan and initiate your recovery protocol.
- During the overreaching cycle, work hard on your recovery between each bout of exercise. Make sure you're getting extra sleep as well as adequate nutrition and hydration. Continue with your supplementation. In addition to implementing my other recommended prevention and treatment strategies, utilize a foam roller. Please refer to **Foam Roller Stretches and Mobilizations**.
- Plan a 5-7 day recovery protocol. In addition to implementing the strategies outlined in **Overtraining – Treatment**, consider the following:
  - **Body Work.** Contact a masseuse, physical therapist, athletic trainer or friend who is skillful in body work and massage. The specific massage technique to use will vary according to your preference. Massage techniques range from a light relaxing massage to a deep tissue massage or utilization of acupressure points.
  - **Self-Mobilization Tools.** Many times, a friend or masseuse isn't available to assist when you need the help the most. A foam roller cannot effectively reach places in the upper back or arms, so other self-mobilization tools may be necessary. You can get creative and use a tennis ball or golf ball, but I like a specific tool called a **Thera Cane Massager**. This tool allows you to apply direct



pressure to a spasming muscle. When held for a long enough period of time, the Thera Cane Massager will usually cause the muscle spasms to release and provide much needed pain relief!



I am also a big fan of the **Thera-Band Standard Roller Massager** (*shown above*). I particularly like that its firmness allows for a deep amount of pressure. If you prefer something similar (but more flexible, for the boney regions of the thigh or lower leg), I recommend **The Stick Self Roller Massager**.

- **Topical Agents.** Many topical agents can help decrease and eliminate muscle soreness and spasms. The method of action varies greatly according to the product used. You may find that one product works better than another. Some of my favorite products in my medicine cabinet include: **Biofreeze Pain Relieving Gel**; **Arnica Rub** (Arnica Montana, an herbal rub); and topical magnesium.
- **Magnesium Bath.** The combination of warm water with magnesium is very soothing and relaxing. Options include: **Epsosak Epsom Salt** or **Ancient Minerals Magnesium Bath Flakes**. I find that the magnesium flakes work better, but they are significantly more expensive than Epsom salt.
- **Stretch.** Stretching is a wonderful way to help eliminate a muscle soreness and/or spasms. We instinctively stretch when we feel a spasm begin. Try gently stretching (lengthening) the muscle which is in spasm. I recommend beginning with a short 30-60 seconds stretch, then repeating as needed. If the spasm or cramp is severe, you will likely need to continue stretching several times in a row, multiple times throughout the day.



Stretching should always be part of a general fitness and lifestyle program. As we age, muscle and tendons tend to lose elasticity so stretching becomes even more important. I highly recommend a daily stretching routine or participation in a group class, such as yoga, which incorporates full body stretching.

- **Acupuncture.** I am personally a big fan of acupuncture. It is very useful in treating all kinds of medical conditions. It can be particularly effective in treating muscle cramps and spasms as it addresses the issues on multiple layers. Acupuncture directly stimulates the muscle by affecting the nervous system response to the muscle while producing a general sense of well-being and relaxation.

Once your recovery time is over, continue with your training plan. Take note of where you are in your training and how you feel. If you feel well and have improved, adjust your training plan by appropriately tapering up the volume and/or intensity to match your added gains.

For example, if you were previously squatting 200 lbs. as a part of your work sets, you may find that you need to increase the weight by 5-10% (up to 210 to 220 lbs.). This would also be true for any other exercise, running distance, and/or pace. Re-establish a baseline for training. Ideally, it's now higher than it was prior to the overreaching phase.

Overreaching can be an excellent method to speed up and more quickly advance in your training. Overreaching increases the risk of overdoing and progressing into OTS. It should be performed carefully and thoughtfully as part of a complete training plan. Overreaching should always be followed with an equally thought out rest and recovery protocol. During your overreaching cycle, document your training and recovery strategies. You can refine it during your next attempt at overreaching, which will make it even more effective and safe in the future.

A thorough recovery program is a critical component to your overall training routine. A consistent recovery protocol is the best way to avoid overtraining and injury, which can cost you valuable training time. ***Be strategic about programming in the use of overreaching, so that you can achieve massive gains and personal bests/records!***

# Foam Roller Stretches and Mobilizations

Foam roller use can be implemented as part of a health optimization program, recovery program, rest day or treatment modality. For best results, it should be performed regularly (if not every day, then several times a week).

The foam roller can mobilize the fascial system to improve performance or recovery, decrease pain, and improve mobility and joint range of motion (ROM). It has positive effects in reducing muscle soreness. Foam rolling promotes more blood flow to the area which allows the body to eliminate waste more efficiently while providing much needed nutrients to aid in recovery. Improving recovery may allow for more intense or frequent training sessions or prepare you for multiple events with little rest. It's an amazingly simple and useful tool.

## How to Use the Foam Roller

- I typically recommend one to three minutes of body weight rolling (if it is tolerated) per extremity, and the same for the thoracic, low back, and buttock area.
- A good rule of thumb is to roll out an area that is tender and sore or recently worked, until it no longer feels tight and sore.
- Again, approximately one to three minutes per area although this may vary based on your size. Increased time will be needed the more developed your muscles are.
- Initially begin by addressing any specific areas of tightness from the legs to the spine or those areas that tend to be a chronic issue for you.
- Foam rolling is generally not advised for those taking blood thinning medications or with blood clotting disorders.
- Avoid aggressive use of the foam roller in the case of acute and/or severe injury.

## Upper Body, Thoracic, and Cervical Stretches with the Foam Roll

Cervical (neck), thoracic (upper back), and shoulder pain is often caused from stiffness in the thorax. We spend so much of our day sitting slouched or standing hunched over (in a forward flexed position for the thoracic spine) that we lose normal mobility. We tend to carry this slouched posture over to our running which causes neck, upper back, and shoulder pain. Poor thoracic and rib mobility can negatively impact lung function. ***The key to eliminating pain is to improve the mobility of the thoracic spine, so the neck and shoulders no longer have to compensate for the lack of mobility.*** The following stretches are designed to counteract the stresses and postures of daily life and restore the normal mobility to the upper back.

I prefer to use a **Foam Roller** (as demonstrated below), but you could utilize several rolled up towels as well or possibly a water noodle with or without towels rolled around it. The key is to have a fairly firm surface that will not impede shoulder mobility which you can lie on. A variation of the foam roll stretches for the upper extremity could also be to lie over a large **Thera-Band Exercise Ball** (also known as a Swiss ball) and perform the same arm positions.

When performing these exercises, it is important to understand that stretching should never be painful. You should feel a mild to moderate stretching sensation. If you start to experience numbness or tingling in the hands or arms, you should discontinue the stretch at that time.

This is not an exhaustive list of methods to utilize the foam roll. Get creative. You can roll out nearly every location of the body. Find the sore spots and roll them out. Just remember to be cautious over the boney areas of the body. If the foam roller isn't working well, substitute it with a lacrosse or tennis ball.

### Shoulder and Thoracic Stretch: Position 1

Keep your knees bent and your arms at your side.

Hold the position for 30-60 seconds.



### Shoulder and Thoracic Stretch: Position 2

Keep your knees bent and your arms out to the side in a cross or “T” position.

Hold the position for 30-60 seconds.



### Shoulder and Thoracic Stretch: Position 3

Keep your knees bent. Hold your arms so they have a 90 degree angle at the shoulder and at the elbow in a “goal post” position.

Hold the position for 30-60 seconds.



### Shoulder and Thoracic Stretch: Transition Position

Bring your hands together in a “prayer” position. This allows your shoulder blades to set, so they don’t get caught on the foam roll as you bring your arms straight overhead.





### Shoulder and Thoracic Stretch: Position 4

Keep your knees bent as you reach your arms overhead.

Hold the position for 30-60 seconds.

Repeat the routine twice, at least 1-2 times per day as needed.



### Thoracic Extension Mobilization

Position the foam roll or towel roll perpendicular across your thoracic spine. Try to position it in the “tightest” area. Using your hands behind your head **for support only**, try to extend your thorax backward over the foam roll. Try to keep your pelvis rolled under and your back flat toward the floor. This will allow for a greater stretch in the thoracic area. Gently oscillate in this tight area 20-40 times depending on how it feels. If you experience increasing pain, stop.



### Thoracic Extension and Shoulder Flexion (Child’s Pose)

Position your hands a little wider than shoulder width with your knees angled out to allow room for your torso. Lean forward as you push the foam roller away from you. Your forehead should be resting on the ground.

Hold the position for 30-60 seconds.



## Lower Extremity Mobilizations using a Foam Roll

### IT Band Mobilization with Foam Roller

Slowly roll your body back and forth along the entire length of the IT band and lateral thigh. Do not roll it over the greater trochanter of the hip (the boney part near your pelvis). Spend extra time on the most painful areas.

Perform 1-2 minutes on each leg once per day.



### Glutes and Buttock Mobilization

Slowly roll your body back and forth along the buttock region. Continue on down the leg in the hamstring area as you feel it is needed. Spend extra time on the most painful areas.

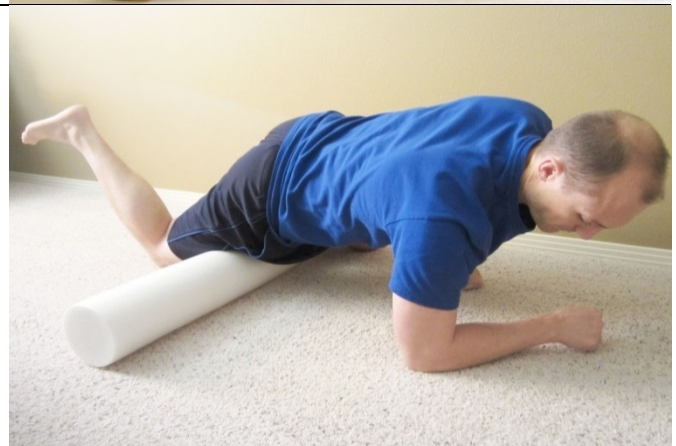
Perform 1-2 minutes on each leg once per day.



### Quadriceps Mobilization

Position your upper thigh onto the foam roller. You may have one or two legs on the roller. Slowly roll your body back and forth in order to cover the entire surface of the quadriceps. You may perform with both legs at a time or just one. Start with a straight leg. For added intensity, bend your knee. Spend extra time on the most painful areas.

Perform 1-2 minutes on each leg once per day.



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## Resource Guide

**NOTE:** Throughout this guide, I reference products, software, supplements, topical agents, and web sites that I personally use and recommend to my family, friends, clients, and patients (for use in the clinical setting). For your reference and convenience, these resources are listed at:

<http://www.thephysicaltherapyadvisor.com/resource-guide/>

Some of the links are “affiliate links.” This means if you click on the link and purchase the item, I will receive an affiliate commission **at no extra cost to you**. I recommend them because they are helpful and useful, not because of the small commission I make if you decide to buy something.

### Products

Foam Roller

Thera-Band Exercise Ball

Thera-Band Standard Roller Massager

Thera Cane Massager

The Stick Self Roller Massager

### Software

Instant Heart Rate

Training Peaks

### Supplements

Amazing Grass Green SuperFood

CapraColostrum by Mt. Capra

CapraFlex by Mt. Capra

ENERGYbits®

Island Fresh Superior Organic Extra Virgin Coconut Oil

Mag Glycinate

RECOVERYbits®

Thorne Research Magnesium Citrate

Tissue Rejuvenator by Hammer Nutrition

Viva Labs Vitamin D3

### **Topical Agents**

Ancient Minerals Magnesium Bath Flakes

Arnica Rub

Biofreeze

Epsoak Epsom Salt

### **Web Sites**

Breath Mastery

The American Physical Therapy Association

The Physical Therapy Advisor

## Stay Connected!

When you subscribe to my e-mail newsletter, I will send you weekly posts on how to maximize your health, self-treat those annoying orthopaedic injuries, and gracefully age. To thank you for subscribing, you will automatically gain access to my FREE resources, **10 Minutes per Day Low Back Pain Prevention Guide** and **My Top 8 Stretches to Eliminate Neck, Upper Back, and Shoulder Pain**.

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