doctorCLYDE™

Avoiding or Recovering From Over-Training

Over-training symptoms indicate it is caused by a suppression of the central nervous system, which then reduces immune and endocrine function, reducing the clearance rate of exercise damage (by the immune system) and the replacement of that damage (slower growth from lower hormone levels), stunting recovery. Without recovery it is impossible to maintain a training program. It can take a year for the central nervous system to fully recover if it is allowed to recover. Training harder as recovery and performance weaken makes it worse, leading to an increase in the frequency of physically illness, accumulating connective tissue injuries with little recovery, and an increase in body fat in spite of dieting and training hard. Accumulating illnesses, injuries, and body fat obviously cut performance further. Ironically, over-training can be driven more from poor nutrition than from the training itself.

The solution: All aspects of nutrition matter for optimum health and performance, but some aspects matter more for specific organ systems. The stressed central nervous system depends most on the stability of hydration, blood sugar, and omega fats. Athletic hydration can depend more on proper salt replacement than on how much water is consumed. Blood sugar can depend more on timing than on the amount of carbs consumed. Omega fats depend as much on the quality of those fats as the foods used to obtain them. Vegetable variety is key to reduce the work-load on the immune system to allow it to recover. Consistent protein in each meal allows for recovery so your body makes use of the endocrine system's recovery hormones (otherwise muscle is used as your protein source).

- **Athletic hydration:** The average amount of sodium in 1 Liter (32 oz) of perspiration is 600 mg, the same amount in ¼ teaspoon of table salt. If this is not replaced, you cannot hold on to your water needs and will go to the bathroom more frequently, staying dehydrated no matter how much you drink. This reduces digestion and sleep quality, making you feel more bloated with fewer nutrients getting into your bloodstream (more excreted in your stool) and the poor sleep depth adding to the chronic mental fatigue already induced by over training. The solution is to eat a low salt diet except in the meal after workouts. To know how much salt to add, measure how much your weight changes across typical workouts, add this weight change to the amount of fluid you consumed during the workouts, and that total is how much fluid you perspired. Every 2.2 lb or 1 L of loss ~ ¼ tsp table salt. Perspiring < 1 L in a workout does not require the addition of any salt. It is the other workouts that hurt you. Excess salt consumption forces fluid loss to excrete the excess salt, causing the same symptoms as low salt.

- **Blood sugar:** Replace 100-300 Cal glucose within 10 min after workouts while the absorption rate into muscle is still at its peak. If you miss this you will have chronically low blood sugar by cutting carbs in meal to get leaner. In other words, low-carb meals to get lean is fine unless muscle glycogen is so low that your central nervous system suffers. Ketosis adaption by the brain still requires 40% of brain fuel to be glucose. That amount of glucose, which is naturally produced by the liver, will be robbed by exercising muscle unless you re-fuel them.

- **Omega (3, 6 and 9) fats:** We cannot make omega-3 & 6 fats and must obtain them from the diet. The brain in particular depends on these fats (at the synapse where neurons signal each other). Omega-3 sources are fatty fish (mainly salmon and sardines) and chia or flax seeds. Supplements are oxidized compared to fresh food sources, and therefore do not count nearly as much. Omega-6 is highest in nuts and seeds. Omega-9 from high quality olive oil is also beneficial; the anti-oxidants in it will burn in your throat as you eat a Tbsp by spoon like medication (most extra virgin olive oil is not that high a quality and should only be used as salad dressing, not for what I am recommending here). Keep omega-3 sources in the freezer, omega-6 and 9 in the fridge, in sealed containers with minimum air, to minimize oxidation. Consume 2-4 Tbsp of the highest quality (not oxidized) chia or flax, that amount of any nut or seed, and high quality olive oil per day during intensive recovery.

- **Vegetables:** The coarseness of vegetables (raw like salad, or lightly cooked so still crunchy) is critical to slowing digestion of meals so the nutrients of the entire meal are time released into the bloodstream for optimum recovery. But it is the freshness of in-season vegetables (i.e. go to the farmer's market) in large variety (get at least a half dozen things even if you don't know what most of the vegetables are) to include daily whether in salad or lightly cooked. If appetite low, make a daily vegetable smoothie (blend, no juicing) to get the variety in.

- **Protein**: Protein is legumes (lentils and starchy beans e.g. kidney or black beans), soy, and animal products (eggs, dairy and tissue e.g. fish, poultry, beef). Other sources like nuts, coconut, hummus, and avocado fall short.