

NATURAL ALTERNATIVES TO PERFORMANCE ENHANCING DRUGS

Drug: Erythropoietin (EPO)

What EPO Does Within the Body:

Erythropoietin (pronounced, ah-rith-ro-poy-tin, and abbreviated, EPO) is a relatively recent entry into the deceitful pursuit of glory. EPO is a protein hormone produced by the kidney. After being released into the blood stream it binds with receptors in the bone marrow, where it stimulates the production of red blood cells (erythrocytes). Medically, EPO is used to treat certain forms of anemia (e.g., due to chronic kidney failure). Logically, since EPO accelerates erythrocyte production it also increases oxygen carrying capacity.

Side Effects of EPO: Death:

In the 1990s, there was a spate of sudden deaths associated within the cycling world associated with EPO: Marco Ceriani (16 years old), Johan Sermon (21 YO), Fabrice Salanson (23 YO), Marco Rusconi (24 YO), Jose Maria Jimenez (32), Denis Zanette (32 YO), Marco Pantani (34 YO), Michel Zanoli (35 YO). This negative publicity was at least part of the reason for the clamping down on EPO use, which was rampant at the time.

The reason that EPO, and transfusion blood doping, is dangerous is because of increased blood viscosity. Basically, whole blood consists of red blood cells and plasma (water, proteins, etc.). The percentage of whole blood that is occupied by the red blood cells is referred to as, the hematocrit. A low hematocrit means dilute (thin) blood, and a high hematocrit mean concentrated (thick) blood. Above a certain hematocrit level whole blood can sludge and clog capillaries. If this happens in the brain it results in a stroke. In the heart, a heart attack. Unfortunately, this has happened to several elite athletes who have used EPO.

EPO use is especially dangerous to athletes who exercise over prolonged periods. A well-conditioned endurance athlete is more dehydration resistant than a sedentary individual. The body accomplishes this by several methods, but one key component is to “hold on” to more water at rest. Circulating whole blood is one location in which this occurs and, thus, can function as a water reservoir. During demanding exercise, as fluid losses mount, water is shifted out of the blood stream (hematocrit rises). If one is already starting with an artificially elevated hematocrit then you can begin to see the problem -- it is a short trip to the critical “sludge zone”.

Additional dangers of EPO include sudden death during sleep, which has killed approximately 18 pro cyclists in the past fifteen years, and the development of antibodies directed against EPO. In this later circumstance the individual develops anemia as a result of the body’s reaction against repeated EPO injections.

There are some other reasons why cyclists might be predisposed to sudden death - riding at high intensities when carrying viral infections (as pro athletes tend to do) is one of them. And, as Ryan Shay, and a number of other high profile cases have shown recently, sudden death is a tragic, but not completely uncommon event.

How to improve the quality & production of red blood cells naturally:

With a balanced diet of fresh fruits, vegetables and lean protein sources, your body will produce the blood chemistry necessary to perform at an elite level. Determining the optimal amount of protein, carbohydrates and fats that an individual needs for optimal health and performance is beyond the scope of this article; however, here is how to create healthy red blood cells.

Natural Eating Solution: eat high quality protein along with high quality whole grains. The protein will provide your body with iron (helps form hemoglobin which carries oxygen in the bloodstream from the lungs to the muscles & brain) and the whole grains will provide you B vitamins (also referred to as Energy Vitamins). A good source of Vitamin C will improve your absorption of the iron.

Drug: Human Growth Hormone (hGH)

What hGH Does Within the Body:

hGH is stored in a pea sized ball called the pituitary gland and is the primary stimulus to muscle & muscle strength, bone growth & bone strength, tendon growth & tendon strength, injury repair and mobilization of body fat for use as energy.

The key to overall health and performance is to stimulate your own production of growth hormone and you accomplish this by stimulating the pituitary gland correctly. The pituitary is stimulated to release growth hormone by another hormone circulating in the brain called somatocrinin. Levels of somatocrinin can be increased by increasing levels of brain neurotransmitters. These neurotransmitters are the chemicals that carry information from one nerve to another. Their activity constitutes your mind, your consciousness and dreams. To increase neurotransmitters, you have to get the amino acids that influence them past what is called the blood-brain barrier. This concept is beyond the scope of this article, but what needs to be discussed here is an amino acid, Tryptophan, which is a precursor of the neurotransmitter serotonin. Serotonin is a compound that slows down brain activity during rest & sleep. Shortly after you fall asleep, your pituitary gland releases a burst of growth hormone.

Side Effects of Synthetic hGH:

External side effects of synthetic hGH include: intense wrist nerve pain, diabetes, overgrowth of the facial bones, gaps between the teeth as the jawbone widens, development of a fatter nose, thickened bone above the eyes resembling an ape and excessive hair growth. Internal side effects include stressed liver, thyroid & pancreas symptoms, diabetes and people who are

genetically predisposed to high levels of hGH (gigantism or acromegaly) typically die prior to the age of 60.

How to improve the production of hGH naturally:

As mentioned above, the largest growth hormone release occurs 30-60 minutes after falling asleep along with high intensity exercise (within moderate volume levels). To take advantage of these normal physiological functions, racers need to increase the duration and quality of sleep and monitor exercise durations and intensity levels. Ideally, racers should train twice daily, mid-morning and early afternoon and take a nap immediately after training. Remember, each time you rest, your body receives a burst of growth hormone naturally.

Natural Eating Solution:

Consume a high quality smoothie that contains a high quality whey protein prior to sleeping and napping. Research has shown that the production of hGH can improve by up to 300% when high quality whey protein is consumed before resting.

Drug: Testosterone

What Testosterone Does Within the Body:

Testosterone has two distinct modes of action, androgenic (masculinizing) and anabolic (tissue building). Up to a certain level of testosterone in your body, a level that varies widely with biochemical individuality, the androgenic action produces more maleness, broader features, more hair, deeper voice, and larger sex organs. Along with it, the anabolic action produces larger muscles and greater strength.

Side Effects of Synthetic or Excessive Testosterone:

If you take synthetic or excessive testosterone, the androgenic action turns nasty (aggression, violent anxiety, paranoia and manic-depressive reactions). Additional negative side effects are irreversible baldness, overgrowth of the prostate, (which chokes the bladder and requires a catheter in order to urinate), acne (the blood fails to contain the excess hormone and overloads the sebaceous glands), impotence, shrinkage of testicles, cardiovascular disease and cancer.

How to improve the production of testosterone naturally:

Sleep 8-10 hours; eat high quality fruits, vegetables and high quality protein. Control your exercise intensity & volume to avoid over stressing your body.

Natural Eating Solution:

Eat foods that are high in boron, zinc, vitamin C, branched chain amino acids (BCAA's) help maximize the release of growth hormone.

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