



## Adaptogens and Sports

*Herbal supplement improves performance and recovery from training and competition*

### Adaptogens

The classification of plants called "Adaptogens" have been used for centuries to help the body and brain cells "adapt" to and *resist physical and emotional stress*. The ability of certain nutritional plants to produce general holistic effects has been known to herbalists for thousands of years.

Adaptogens are completely safe and effective and have been tested by various institutes, academies and sports agencies - and contain no drugs nor banned substances. They are *neither a stimulant nor a steroid* and do not act like either. Rather, it allows the body to adapt to change; e.g. when commencing a training program and athletic competition. Adaptogens are not on the NCAA or International Olympic Committee's list of banned substances; therefore, athletes are free to take it if they choose.

The father of adaptogens is the physiological pharmacologist, Dr. Israel I. Brekhman. He worked at the Far East Science Center of the USSR in Vladivostok as head of its Department of Physiology and Pharmacology of Adaptation.

An adaptogen is defined to be *protective, boost recovery and non-toxic*. It should be noted that if adaptogens are really harmless, protective and recovery-enhancing, they should clearly be able to *improve athletic performance*. Adaptogens have been shown to improve athletic training programs and therefore quicken race times by keeping athletes from getting ill, preventing burnout from heavy training and by augmenting recovery so that intense workouts can be carried out more frequently.

With over 3,000 international studies involving more than 1,200 scientists and 500,000 people, adaptogens have been shown to accomplish the following in human physiology:

- Increase protein utilization and metabolism
- Raise levels of antibody immunization
- Elevate enzyme utilization by means of immune system stimulation
- Enhance mental work capacity
- Increase physical work capacity along with performance and endurance
- Reduce free radicals so as to prevent oxidation
- Improve eyesight, color perception and hearing functionality
- Provide beneficial effects in cardiovascular and respiratory systems
- Offer a superior response to toxins, excess cooling and overheating
- Improve adaptation to changed barometric pressure, ultraviolet and radiation
- Enhance physiological response for too much motor activity



One of the most important biological aspects of adaptogens is the successful application for athletes who are exposed to high levels of physical and nervous system stress (loading). It has been proven that the level of energy required to go from full rest to intensive muscular loading can vary as much as ten times, and that adaptogens can *adjust the body's metabolism to reduce stress* by reducing the level of stress hormones (cortisol) that can be secreted as a result of muscular activity and nervous system loading.

Although exercise can decrease stress levels overall, and can provide a long-term relaxing effect on both the mind and body, in truth, *physical activity is interpreted by the body as a stressful event* manifested by increased pulse, respiratory rate, sweating, and blood pressure – athletes can seriously benefit from supplementing with adaptogenic herbs.

Another key action of adaptogens, besides a regulating influence on metabolism, is they *accelerate recovery* from training resulting in *greater energetic efficiency*. Adaptogens are connected mainly to the fast increase in the level of training due to acceleration of the anabolic (regenerative) process and thus an increase in energy and maintenance of protective physiological systems; effectively making the body's reaction to stress unnecessary.

Based on various pieces of research, adaptogens diminish the stress from muscle loadings by *activating stored energy from glycogen*, which is a polysaccharide that is the main form of carbohydrate storage that occurs primarily in the liver and muscle tissue. Glycogen is readily converted to glucose as needed by the body to satisfy its energy needs. The key is in the energy cycle. Adaptogens allow cells generally, and muscle cells in particular, to utilize less glycogen per volume of work. By promoting more rapid glycogen and muscle restoration, adaptogens could enable athletes to avoid the burn-out associated with glycogen depletion, and permit them to fit more high-quality workouts into a defined period of time.

All of this information explains how adaptogens can be beneficial. The *enhanced protein metabolism* associated with adaptogens can boost recovery and lead to greater gains in muscle strength. The metabolic effects of adaptogens continue to be studied and research continues to understand the variety of other chemical reactions inside muscle cells.



## **Stress**

A person's stress response describes the condition caused by a reaction to physical and emotional factors as well as environmental and chemical considerations. Stress in sports can refer to *physical effort* and *mental tension*.

The general concept of stress is "loading" the body's internal organism including the central nervous, endocrine (hormone), respiratory, cardiovascular and immune systems. When we experience or feel stress, our bodies respond by stimulating the hormonal glands throughout our body to release hormones, including *adrenaline* and *cortisol*.

The *physical, emotional and behavioral* signs and symptoms of stress in sports include increased heart rate; sweaty palms; headache; diarrhea; constipation; trembling, twitching; vomiting; sleep disturbances; fatigue; shallow breathing; dryness of the mouth or throat; susceptibility to minor illness, irritability, angry outbursts, impatience, insomnia, forgetfulness, preoccupation, blurred vision, lack of concentration, lack of attention to detail, decreased coordination, attention deficit, aggressive behaviors, withdrawal, listlessness, hostility, accident-proneness, nervous laughter, compulsive behavior and impatience.

The *constant pressure and stress* to perform well in training and competition can increase the stress hormone – cortisol and lead to the following internal body responses:

- Breathing becomes rapid and lungs take in more oxygen
- Blood flow can increase 300-400% priming the muscles and brain for demand
- Spleen discharges red and white blood cells allowing more oxygen transport
- Hormones dampen immune system so white blood cells can be redistributed
- Immune system boosted for injury, infection at skin, bone marrow and lymphs
- Blood diverted from mouth and throat
- Blood diverted from skin causing cool, clammy, sweaty skin
- Digestive system shuts down for short periods of time

## **Stress Hormones**

*Cortisol* is the body's chief stress fighting hormone produced by the adrenal gland and is high during periods of stress and low when relaxing. Cortisol is an important hormone responsible for regulating the manner in which our bodies use our fuel resources. It is secreted by the adrenal glands and involved in the proper glucose metabolism, regulation of blood pressure, insulin release for blood sugar maintenance and rapid fat and carbohydrate metabolism.



A Victoria University (Australia) study in 1997, for example, showed that elite golfers experienced the highest cortisol levels (from anxiety) prior to beginning competitive play while their anxiety level did not change significantly during the golf rounds.

Unnaturally high levels of cortisol can also result in *blood sugar irregularities* creating fatigue, immune system deficiencies, anxiety, panic attacks, depression and increased risk of associated diseases. Even if the original stressor disappears, the body may remain in continuous or “hyper” state of anxiety, making stress relief nearly impossible.

Research by Mary Carlson of Harvard Medical School and others have found that elevated levels of cortisol can kill off cells in the hippocampus portion of the brain that plays a central role for memory. Even low levels can *interfere with focus and concentration*.

It is important to note that small increases of cortisol have some positive effects including bursts of energy, heightened memory functions, bursts of increased immunity and lower sensitivity to pain. The problem occurs when we ask our body to react too often or with excessive resistance to stress – both of which can lead to elevated cortisol levels resulting in sub optimized training and athletic performance.

### **Athletic Training**

A University of Connecticut study in 2004 confirmed that soccer players with elevated levels of cortisol from stress and inappropriate training can experience reductions of performance during a season.

The most consistent psychological factor related to sports performance and injury from competition and training, seems to be stress. It follows that the ability to cope with stress can act as an essential buffer to reduce the likelihood of injury. Although the causes of stress can reside both inside and outside the sporting arena, and the coping mechanisms used by athletes may vary; one of the fundamental buffers to stress is *controlling the level of cortisol* that your body naturally secretes when it is under stress.

When physical and mental stresses exceed the level of physiological adaptation (training), the body’s internal systems cannot proceed efficiently. Sports training schedules are based on the phenomenon that the best time to begin the next training session is only when there has been sufficient physiological adaptation (training). If sports training occur too often, while the body has not yet compensated for former expenditures of energy, there is a decrease in the level of physiological performance - resulting in the phenomenon of overtraining.



Therefore, the application of adaptogens in sports is connected mainly to the *fast increase of physiological adaptation* (level of training) due to accelerating the anabolic (regenerative) metabolism processes. This accelerated regeneration results in an increase in energy and maintenance of specific protective systems in the body.

In summary, improving the functional maintenance of body systems, with the help of adaptogens, results in an increased level of physiological adaptation resulting in improved focus, stamina, endurance and recovery. High efficiency of the application of adaptogens during trainings and directly before competition has been confirmed in a number of international studies.

### **Russian Sports**

Some experts in the field of sports nutrition believe that the Soviet dominance in the Olympics and world championships during the decades following the 1950's was related to the extensive development of perfectly legal, performance-enhancing nutritional substances called - adaptogens.

The first painstaking studies into the physiological effects of adaptogens were initially carried out by a Russian scientist name Nikolai Lazarev in the 1940s. Lazarev believed, as stated, that adaptogens were substances naturally found in plants which could put organisms into a state of "heightened resistance", allowing them to better withstand extraordinary challenges and to more effectively adapt to physical and mental stresses.

His studies and those by protégé Brekham have shown that wrestlers, weight-lifters and gymnasts using adaptogens *increased their work capacity by 12%*. Other studies showed that adaptogens helped athletes (skiers) *restore normal pulse and blood pressure twice as fast* after intensive training and competition. The application of adaptogens by athletes in all cases promoted an *increased level of physiological adaptation, accelerating training and steady recovery* resulting in relaxed vascular systems.

In one research study carried out by Brekham, runners who ingested the adaptogen, eleutherococcus, adapted to the 10K so well that they *improved their 10k times by five minutes*, while a placebo group was unable to improve. The overall study group consisted of non-elite runners who averaged about 50 minutes for a 10K. In addition to faster race performances, the runners also upgraded their reaction times and mental concentration after taking the adaptogen.

Several other Russian studies also supported the use of specific adaptogens. For example, Professor A. V. Korobkhov at the famed Lesgraft Institute of Physical Culture and Sports in Moscow, in a study carried out with 1500 athletes, found that the



adaptogen eleutherococcus *increased stamina and endurance, improved reflexes and coordination, and expanded the amount of training* which athletes could tolerate without harm, especially in long-distance events. Observations were also made of 30 Olympic sprinters, decathletes, and marathoners in this study; they almost universally reported *increased endurance* and an enhanced willingness to repeat tough workouts soon after they were completed.

Dr. Sergei Portugalov, chief advisor in nutrition and pharmacology to the Russian Olympic teams and also Head of the Laboratory of Biologically Active Substances, National Research Institute of Sport in Moscow, and a member of the World Anti-Doping Conference, has said that *“Sports have always been a major priority in Russia, and finally the world will know...our greatest competitive advantage has come from performance supplements derived from natural plant materials (adaptogens). The nutritional supports provided by these supplements helped our athletes achieve better performance, stamina, endurance, strength, recovery, resistance to infection, muscle development, and adaptation to changes in climate, time zones, and altitude.”*

## **International Sports**

Until the collapse of the Soviet Union in 1989, athletes and coaches in the West were almost completely unaware of adaptogens. Soviet sports authorities and athletes have now admitted that they did not want to reveal information their natural supplement discoveries to the outside world, especially since a great deal of scientific effort had gone into the extract - and since the Russians believed in particular that a key adaptogen, eleutherococcus, could indeed enhance performance.

Loren Seagrave, coach to U.S. champion sprinter Andre Cason, uncovered the Russians' secret and three months after going on the adaptogen program, Andre defeated the fastest sprinters in the world, including Carl Lewis -- and became the U.S. champion in the 100-meters.

The World and Olympic record smashing Chinese swimming and track teams under the coaching of Ma Junren also used adaptogens. Ma's most famous star, Wang Junyia, the 5'3, 100lb. distance runner, set world records in 4 events in 1993. Wang's training mileage was an astounding 175 miles per week, double that of other world class athletes who were suffering over-training stress at their lesser distances. Wang broke what was considered the unbreakable 10,000 meter record by 42 seconds and her stable mate, Dong Liu, was just 10 seconds behind her!



## **Vitalife and Sports**

Natural herbal supplements such as Vitalife adaptogens increase energy and work through the adrenal glands to control the excess production of the killer stress hormone, cortisol, and has helped millions around the world “adapt” to various stress conditions and eliminate the damaging effects of stress that can increase the risks of poor health and disease.

Many of the same adaptogens that have been so thoroughly studied by the international scientific community and proven to improve the performance of amateur and professional athletes around the world, are contained in the Vitalife proprietary blend of adaptogens. The special blend of Vitalife adaptogens include Eleutherococcus senticosus, Schizandra chinensis, Aralia mandchurica, Crataegus oxycantha, Viburnum sargentii, Glycyrrhiza uralensis, Rhaponticum, carthamoides, Rhodiola rosea, Sorbus aucuparia, and Inonotus obliquus. Several of these adaptogens cannot be obtained through health food stores or herbalists and are the key ingredients that provide the amazing results of Vitalife. The adaptogens in Vitalife are nature's remedy for athletes seeking improved levels of training and competitive performance.

Vitalife adaptogens provide many benefits for athletes including:

- Increased stamina and endurance
- Improved recovery from intensive training and competition
- Improved reflexes and coordination
- Enhanced mental clarity
- Better protection against free-radicals
- Proper functioning of enzyme systems
- Improved muscle and nervous system function
- Assisted transfer of nourishment and energy to cells
- Reduced joint and muscle pain
- Reduced high blood pressure
- Lowered blood sugar