Spirovitalisation using the Airnergy Principle

Basic Program for Sportsmen and Sportswomen

Prof. Dr. med. Klaus Jung

Background

As a practising doctor of internal medicine, sports medicine and complementary therapies and in my capacity as (former) head of a University Institute for Sports Medicine responsible for research and teaching for many years I have been confronted for my entire professional life with sports-related aspects relating to performance and recreational sport as well as prevention and rehabilitation.
The focus of my work in my teaching, research and practice was primarily increasing physical performance by natural means, avoiding overload phenomena and injuries as well as preventing, controlling and overcoming illness through physical training. Given my areas of interest it was inevitable that my attention was drawn to the question of achieving optimum oxygen supply to the individual cells and tissue (cardiovascular system, musculature, brain, locomotor system) and the neutralisation of oxygen radicals (resulting from inhaling airborne toxins, smoking, eating habits and stress) in keeping with the sports medical knowledge at the time, whereby the maximum oxygen uptake capacity represents the gross criterion for physical performance.
The scientific focus in sports medicine research at the time was the possibility of increasing the uptake of oxygen (VO_2max). But was there not also – in theory at least – the possibility of enhanced liberation of the enriched oxygen that was already present and it's more effective utilisation?
In this connection my attention was drawn to the biotech company Airnergy in Hennef that was the first to develop Spirovitalisation using the Airnergy principle and establish it within complementary medicine, promising holistic advantages in the areas of fitness, endurance, concentration and regeneration without being classed as a banned method under the doping guidelines. Following my own research and from the experience of several million uses, including by numerous professional and competitive sportsmen and women, these positive effects were confirmed again and again by the sportsmen themselves and by their performance coaches and medical carers. These reports were documented and passed on to the documentation centre.

Introduction

Looking through the extensive data aroused my curiosity and made me want to evaluate the basic principles of Spirovital therapy to find possible explanations for how it works, even though I admit I was very sceptical at the start of my exploration.
Statements from successful competitive athletes:

1. Track and field events (middle distance): Clear increase in performance, improved regeneration, fewer oxygen problems in the sports hall (A.W.).
2. Cycle-racing (long-distance): Significantly quicker regeneration, drop in breathing rate at same load intensity (C. K.).

3. Skiing (biathlon): Improved sleep quality, improvement in shooting scores, faster altitude adaptation (U.N.).
4. Shooting (room guns): Delayed onset of tiredness, ability to concentrate for longer, accelerated regeneration, increased endurance (K.H., B.L., R.R.).
5. Track and field events (long-distance running): Accelerated regeneration, enhanced sleep quality, increased immunity, fewer muscle problems (H.S.).
6. Weightlifting (power record): Significantly faster regeneration, significant increase in strength, avoidance of muscle problems (K.K.).
7. Cycle-racing (RAAM): Rapid recovery, avoidance of muscle problems (J.K.).
8. Competitive golf: Increased sense of well-being, faster regeneration, enhanced performance (J.H.).
9. Swimming: Strengthening of immune system, significantly faster regeneration (F.v.A.).
10. Operation on an ankle joint: Accelerated healing process, significant reduction in pain, much shorter period required for regaining residual fitness (M.B.).
11. Formula 1: Constant, regular use for training and in competitions, much quicker recovery, better preparation.
12. Free diving: Significant extension of apnoea periods up to 6 minutes, reduction in perceived exertion, faster regeneration (S.G., G.M., M.B.).

All of these statements come from top athletes from very different disciplines, many of them world-class athletes with Olympic experience. In short sufficient reason to fully awaken my curiosity, both scientific and practical. This automatically raised the following questions:

- What are the motoric and psychological demands that play a role in sport?
- What exactly happens during Spirovitalisation?
- What can Spirovital therapy do to improve performance in respect of the different physical demands?

Profile of physical demands in sport

There are five main motoric attributes required for physical training, namely coordination, flexibility, strength, speed and endurance. Their percentage contribution differs from sport to sport, for example long-distance running mainly requires endurance, competitive gymnastics primarily requires coordination and flexibility. Even though there are fluid transitions and many cross-overs in the motoric capabilities required for different types of sport, it is useful to make a distinction for theoretical and practical reasons in order to differentiate individual strengths and weaknesses to be able to draw up detailed individual training schedules.

Co-ordination:

This refers to the interaction of the central nervous system and the skeletal muscles within a movement sequence with the aim of performing the movement in the best possible way.

The quality of coordination is determined by the formation of detailed memory engrams, their rapid recall, automation of the individual movement sequences (interaction of agonistic and antagonistic muscles), optimum coordination with the inner ear (vestibular system) and the observance of certain physical laws. When they are so activated these structures have a high oxygen requirement.

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

Coordination is improved primarily by practice which leads to a saving in energy expenditure for a given activity, thereby reducing the oxygen requirement, the degree of fatigue and the risk of injury.
As will become clear in the subsequent discussion, in addition to a saving in energy expenditure, an enhanced energy supply (oxygen supply) is expedient, and this can also (or additionally) be achieved by Spirovital therapy.

Flexibility:

This is understood to be the possible range of voluntary movement in a joint or a series of joints. The greater the range of movement, the greater the flexibility.
Limiting factors for flexibility are primarily mechanical in nature, for example the structure of a joint, the muscle mass and the elasticity of the active and passive locomotor system.
Flexibility can be improved by physiotherapy techniques and especially by stretching exercises. Even if it does not exactly say so in the scientific literature, it would appear that energetic (oxygen-dependent) processes play an important role in the adaptation (restructuring) of the tissue involved. During stretching blood circulation is reduced or even suspended and in the relaxation phase rapid regeneration (compensation of deficits by optimum oxygen provision) is all the more important.
In this connection Spirovitalisation should be very beneficial before or during loading, on the one hand to avoid strains and injuries and on the other to guarantee rapid restoration of a high degree of action readiness.

Strength:

This is required in most types of sport, even though it takes very different forms in a long jumper or javelin thrower than for example in a weightlifter or wrestler. The difference lies in the predominant requirement for either static or dynamic strength. It is difficult to give an overreaching scientific definition of strength.
The main differentiation in strength training is in the requirement for its maximum static or dynamic percentage and for explosive power and strength endurance.
Static strength is defined as the maximum tension that a muscle or muscle group can voluntarily exert in a certain position against a fixed resistance. Strength is determined by certain muscle properties (mass, structure, pre-stretching), coordination aspects and motivation.
Dynamic strength is defined as the voluntary movement of a mass within a programmed procedure. As explosive power it is related to the amount of time required for it (dynamic strength per unit of time). In addition to static strength it is affected and determined by muscular aspects (mass, contractility, pre-stretching), coordination, motivation and anthropometric characteristics.
Alongside speed endurance, strength endurance represents a special form of general anaerobic, dynamic endurance, such as is required for example when performing a lot of knee bends with a weight on the shoulders. It can be increased by running wearing weighted vests, running uphill, running on difficult terrain (sand, muddy or boggy ground), rowing/paddling with a brake resistance or performing crosses with additional weights.
Strength training in general is a matter of increasing muscle mass and muscle function, of adaptation of the passive structures of the locomotor system and of increasing resistance to fatigue. This is primarily achieved by tailored physical training, where the improvement of the energy status (oxygen supply) of all the

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

structures involved (central nervous system, musculature, locomotor system, metabolism, psyche, endocrine system, immune system) plays a decisive role.
Spirovital therapy offers an optimum support for this task and also provides effective protection against injuries/strains and leads to effective neutralisation of the extra oxygen radicals that are produced during competitive sports, especially in cases of injuries and stress.

Speed:

In the biological area this can be defined as the performance of a given motor action per unit of time. Its individual factors are reaction speed, speed of an individual movement, frequency of movement and speed of travel.
The fact that better endurance is usually accompanied by shorter reaction times underlines the importance of an optimum oxygen supply to the corresponding structures. The speed of an individual movement and the frequency of movement are also determined by an adequate supply of energy (oxygen supply), as is demonstrated by the relationship between the development of an explosive burst of strength and the store of myosin-ATPase (a muscle enzyme that breaks down ATP).
Speed of travel can be schematically divided into basic speed and speed endurance (maximum achievable speed within a cyclical movement sequence or loading of large muscle groups over a period of 20 – 120 seconds, i.e. anaerobic or predominantly anaerobic). It is true that in this case there is no direct dependence upon a high oxygen supply but nevertheless energy status still plays an important role (formation of energy reserves, quicker regeneration, capturing of oxygen radicals).
Appropriate training can improve speed to some extent but this is a feature that is largely genetically determined and the improvement is small compared with that achieved by endurance training. The enzymes that are affected are actomyosin ATPase, creatine kinase and myokinase and also hexokinase, citrate syntase, glycogen phosphorylase and triose phosphate dehydrogenase, an indication of the absolute importance of an optimal energy status as a basis for allowing the specific developments to take place.
Spirovital therapy appears to have a favourable influence upon this process. This should be especially true for the speed endurance part.

Endurance:

This is characterised by the ability to sustain a given output over the longest possible period (resistance to fatigue). This can be distinguished according to the percentage of the musculature used (local: less than 1/6 - 1/7 of the skeletal musculature, general: more than 1/6 – 1/7), according to intensity (aerobic: without incurring an oxygen debt, anaerobic: incurring an oxygen debt) and according to the type of work (dynamic or static).
With the normal oxygen transport system performance is limited by the available intracellular oxygen supply, the capacity of the mitochondrial metabolism, the quality of the metabolic processes and the size of the metabolisable energy stores. For all forms of endurance the maximum oxygen uptake capacity plays an important determining role so that endurance gains are primarily achieved by training to increase the oxygen supply (energy status) of the working muscles.
For none of the other main motoric demands is performance capability so dependent upon the individually prevailing oxygen transport capacity.
However, as for the four other main motoric requirements, it is still difficult to understand why the standard training measures concentrate on increasing oxygen

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

uptake capacity and hardly focus at all upon improving the release of oxygen in the tissue or in the individual cells and the utilisation of oxygen there.

Psychological and mental demands during fitness training

The central nervous system plays a central role in carrying out the simplest to the most highly complex movement sequences.
Thus motivation areas in the cerebral cortex, in the frontal lobe and in the limbic system determine the call-up of movements. In the association cortex there are corresponding drafts for movements or goal-oriented sequences of movements (strategies) ready for call-up (motor memory) but these will have had to be developed practicing for varying lengths of time. These stored draft motor programs are converted into concrete movement programs or movement sequences in the pre-motor cortex or in the supplementary motor cortex and are then adapted to the respective external situation in the cerebellum and the basal ganglia, motorically coordinated and spatially – temporally segmented.
From there they are sent to the motor cortex as the organ for performing the individual movement programs. At the same time there is sensory feedback here from the periphery in the sense of a continuous exchange of information with possibilities for correction. Via specific descending motor pathways the differentiated movement patterns travel via the brainstem to the motor neurons in the spinal cord that then cause the motoric units of the activated muscle groups to make the corresponding changes in length and power and thereby changes in movement and/or position.
All of this means a lot of brain activity requiring a large (regional) increase in metabolism, as can clearly be seen from PET (positron emission tomography) studies and from EEG (Electro EncephaloGraphy) studies. The requirement for oxygen (energy) is correspondingly increased and this is manifested by intensified circulation.
The question as to whether, in addition to the increase in circulation, an increase in oxygen release and oxygen utilisation could also be beneficial to the brain must remain open.

Strains and injuries in sport

Most strains and injuries occur during training rather than in competitions. The main causes are poor technique, inadequate warm-up beforehand, over-tiredness, failure to observe the rules of sport and climatic conditions.
If an injury should occur, then, in addition to rapid and appropriate treatment by a specialist, the RICE rule should be followed (**R**est, **I**ce, **C**ompression, **E**levation). The main purpose of this is to avoid an increased flow of blood and water into the injured tissue as this could considerably impair blood circulation (arterial inflow, i.e. provision of oxygen or energy and important substrates, and venous outflow, i.e. removal of toxic trauma products).
Even here the principle of Spirovitalisation or the local application of energised oxygen from the atmosphere seems to be indicated, mostly as an add-on to the necessary traditional procedures, especially in the early phase but also longer term up until “restitutio ad integrum.”

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

Free radical loading in sport

Apart from the many positive effects of physical exercise there is no doubt that sporting activities also carry some health risks. Primarily these relate to the holding and locomotor apparatus, also to collapses (dehydration, over-acidification, unrecognised heart disease), short-term, temporary overloading ("athletes disease"), vein damage (being hit by balls and tennis rackets) and free radical loading.

Oxygen radicals are omnipresent in the atmosphere and consequently more are taken in with intensified breathing. In addition they are created in the metabolic process and so if metabolism is increased so are the oxygen radicals. They are released on the transfer of electrons as part of mitochondrial oxidation up to 5% of the oxygen used for this in the form of oxygen superoxide (H_2O_2). The release of O_2radicals can also be increased in the capillary endothelia under certain circumstances (such as intensive physical loading, stress). They are thought to play an important role as a mediator of skeletal muscle damage (strain, injury, inflammation).

It is true that under normal circumstances certain enzymes such as GPX, GSH and SOD as well as vitamins A, C, E and beta carotene contribute to the metabolism of H_2O_2 to water and oxygen but may not be equal to the increased arising during intensive and long-term physical loading. This can trigger damage to the cellular membrane up to necrosis and inflammatory phenomena of the muscles. Oedema is also initiated with the subsequent reduction in the capillary lumen due to endothelial swellings and this impairs the supply of oxygen (energy) to the dependent compartments.

How Spirovitalisation using the Airnergy principle works

Spirovitalisation brings about the short-term elevation of the oxygen in the atmospheric air from the normal state (triplet oxygen $^3O_2$) to a higher energy level (singlet oxygen, $^1O_2$) under the effects of light of a specific wavelength in the presence of a specially-selected photosensitiser (Airnergy). However, this higher energy state of oxygen “only” lasts for fractions of a second before the energy that is released on its reversion to the normal state is given up to the water molecules in the air (conservation of energy principle) and inhaled together with the "normal" atmospheric oxygen of the ambient air (respiratory air saturated with water vapour) and distributed throughout the entire organism.

These correlations are theoretically derived and practically confirmed by corresponding studies (increase in oxygen release, increasing of oxygen utilisation, stabilising of oxidative equilibrium) for three vital, energy – dependent metabolic areas:

1. Better liberation of oxygen from a bond in the red blood corpuscles (multiplication of **2.3-Biphosphoglycerate** in the erythrocytes, which shifts the oxygen binding curve to the right so that, at the same partial oxygen pressure in the erythrocytes, oxygen saturation drops or the release of oxygen to the tissue, i.e. also into the individual cells of the body and there into the mitochondria, the place of ATP production, is improved).
2. Better utilisation of the oxygen in the cell-bound power stations (mitochondria) to create the most important energy store in the body (ATP) (activation of **cytochrome oxydase**, which induces an enhanced reaction of the electrons

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

released in the respiratory chain with oxygen and therefore increased oxidative phosphorylation).
3. Enhanced neutralisation of oxygen radicals (reduction of **NADPH oxydase** activity, thereby reduced formation of oxygen radicals or increased anti-oxidative capacity).

From the available experience and knowledge that has been analysed so far it appears that Spirovitalisation represents a complex intervention in the bio-cybernetic and bioenergetic functional sequences of the organism, which, by harmonising the basic regulation in the cells and in the extracellular matrix, leads to improved oxygen supply to all structures and there to enhanced O_2 utilisation and thereby activates the endogenous energy production (ATP) and contributes to regulation of cellular metabolism in the whole organism.
Preventatively, curatively and in the fitness training process Spirovitalisation activates and supports necessary bioregulatory processes in the sense of a complete and universally-applicable measure. As a basic therapy it accompanies and promotes both prevention and rehabilitation, performance optimisation, acceleration of regeneration, clinical treatment concepts and conventional medical interventions.

Results of studies into the use of Spirovitalisation in sport

In 2007 E. Wieneke published some remarkable results into the effects of Spirovitalisation on physical functional capacity, which impressively confirmed the subjective impressions of many sportsmen and women who had experience with Spirovitalisation.
In a preliminary study he used himself to elicit the effects of a Spirovitalisation treatment before performance upon endurance (running on a treadmill). The results clearly showed that for the same amount of exercise his heart rate had decreased from an average of 141 bpm (control test) to 123 bpm (actual test).
In an initial main test 15 people underwent a treadmill loading test in a (placebo-controlled) cross-over test both with and without prior Spirovitalisation. For the individual loading stages (2.0 to 3.2 m/sec) the average heart rates differed by 7-9 bpm (139-146; 149-156; 159-168; 168-177; 177-186), lactate values by 0.4 to 0.9 mmol/l (1.4-1.8; 1.8-2.2; 2.3-2.9; 3.2-4.1; 4.6-5.7). All of the differences are to be regarded as highly significant.
This result was once again clearly confirmed in a second main test. There were statistically highly significant drops in heart rate and lactate values for the same loading stages. It is also worth mentioning the increase in the average aerobic – anaerobic threshold (the limit up to which the required effort is aerobic, i.e. can be performed without incurring an oxygen debt) from 105 to 130 W.
In 2006 I. Simbal wrote a paper on the use of Spirovital therapy in equestrian sports. She uses the example of three horses which, shortly after the start of Spirovitalisation achieved large increases in performance and faster competition times, one of them after a clearly accelerated recovery from aspiration pneumonia that is hardly responsive to conventional treatment. With due caution because of the low number of cases, she derived from this that there is a clear indication of a possible general increase in performance and called for further, strictly scientific studies into the relationship between Spirovitalisation and the increase in performance.
The objective economy of all the organ systems involved in the performance is in contrast to the subjective experience of less expenditure of effort for the same

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

intensity of performance that is reported by the participants in these studies but also by sportsmen and women who have experience of Spirovital therapy.

Applications for Spirovitalisation in sport

The three indicated action mechanisms of Spirovitalisation are the increased release of oxygen, enhanced oxygen utilisation and increased elimination of oxygen radicals. This has an equal effect upon the extracellular matrix and all cells of the body and therefore all organs with the focus upon particularly metabolically active, oxygen-dependent structures (such as the muscles, cardiovascular metabolism, central nervous system, liver, sensory organs and the immune system).

It is precisely these metabolically active organs that are particularly stressed during physical or psychological loading and bring about a constantly high physical or psychological stress situation. In this context Spirovitalisation relieves the heart by bringing about comparatively lower heart rates with a simultaneously increased oxygen supply to the muscles, reduced metabolism for the same output, sensitisation of all sensory organs because of the better oxygen supply, quicker and deeper regeneration after exertion, and improved ability to fall asleep and sleep through and optimisation of the immune system, on the one hand by increasing concentration, alertness and reactive capacity, increased motivation and mental resilience, quicker relaxation and stress management, optimisation of action during multitasking and an increased resistance to fatigue.

The prerequisites for optimising physical and psychological performance and their maintenance over time are a maximum increase in oxygen supply and utilisation, the harmonisation of biological – cybernetic functions and their stabilisation and optimisation of the milieu (intercellular substance). The most important elements here are the endogenous control circuits that have to be maintained or restored, but at least individually optimised as far as possible and stabilised. Important prerequisites for this are an oxygen supply and utilisation that covers the respective requirements and good functional self- cleansing of the milieu (“decoking" of the intercellular tissue, neutralisation of oxygen radicals). Biocybernetic influencing of the endogenous control circuits makes use of certain selected stimuli (such as e.g. energising the respiratory air) in order to activate desired reactions (microcirculation, oxygen supply, metabolism, disposal). The organism should be stimulated to produce "expedient" reactions.

As can be demonstrated in an evidence-based way using the HRV (heart rate variability) method, Spirovitalisation obviously leads to an economy in cardiac output (reduced heart rate), to a harmonisation of the vegetative autonomic nervous system (reduction in sympathetic tone, increase in parasympathetic tone), to an increase in the regulation band of the entire organism, to optimisation of metabolic processes (increasing energy status, building up energy reserves, accelerated cellular regeneration, shortening of healing times following injuries and strains) and to a reduced stress response of the muscular system and of the cardiovascular system and the entire organism at rest, but especially under load, in summary to an increase in and stabilisation of basic health and physical performance capability. This was shown very clearly in a well-regarded study by Hottenrott et al. (Dtsch. Zschr. Sportmed. 2009).

Having examined the physiological and biochemical aspects of Spirovitalisation NADA (the National Anti-Doping Agency) and WADA (the International Anti-Doping

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com

Agency) did not classify it, as initially intended, as a forbidden method, giving the justification that ambient air is indeed irradiated with UV light and then inhaled via a nasal cannula but the deciding factor is that the energised oxygen only persists for fractions of a second and that, at the time the air is inhaled, it has the same composition as atmospheric air.

Univ.-Prof. Dr. med. Klaus Jung
Gleishorbach

Airnergy International GmbH
Wehrstraße 26
D-53773 Hennef
Tel: (+49) 2242 93 30-0
Fax: (+49) 2242 93 30-30
Web: www.airnergy.com
Email: presse@airnergy.com