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He has the deed half done who has made a beginning.
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Foreword:
Prof. Dr. med. Klaus Jung

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Even during my school days my fellow pupils called me a „health freak" because of my opinions and my general tendency to lead a healthy life. What could have been more appropriate then than for me to decide to study medicine on leaving school, to take a special interest in sports' medicine right at the start of my studies and to become interested in the possibilities of targeted optimisation of oxygenation and oxygen supply to the individual organ systems in the human body?
My career continued along the same lines: doctor for internal medicine with the additional designation „sports' medicine" and „alternative medicine"; post-doctoral thesis on the possibilities of out-patient rehabilitation following a heart attack; posts in various hospitals and institutes, over the last 25 years heading up a university department for sports' medicine and extending research, theory and practice to prevention and rehabilitation.

The focus of my professional work has been the maintenance of health, convalescence, avoidance of illness and overcoming illness, in particular chronic diseases. I was (and remain) convinced that predispositions to chronic diseases (such as heart attacks, arthrosis, osteoporosis, high blood pressure and even cancer) are inherited. However, whether or not they manifest themselves depends largely upon external conditions that can be influenced (stress relief, nutrition, physical fitness). In my role as a doctor I therefore had to place the greatest value upon providing serious, factual information to the patients in my care and providing ongoing motivation towards a health conscious lifestyle. As I see it, the prime goal of all measures is to provide the body with an optimum supply of energy and the most important prerequisite for that is the best possible supply of oxygen, its distribution and utilisation in each individual cell.

So far, so good! Taking personal responsibility, overcoming internal and external resistances to a healthy lifestyle are required. But what about people who are not able to do this? People who are old, ill, disabled, lack insight or willpower - is there no solution for them?

Of course! Where natural energisation of the body is not feasible, it should be possible to offset the deficit of oxygen uptake and oxygen utilisation using „artificial" methods! In fact, over the last hundred years many potential methods for „artificial" energisation of the body have been developed, tested and, in many cases, recognised as a good therapy.

The best known is Prof. Dr. Manfred von Ardenne's multistep oxygen therapy, with which I also used to work intensively in scientific studies and practical applications.
It produced a good level of success with many people and many diseases. And yet: modern Western medicine has had reservations about it up to the present day. The theory lacks certain explanations such as, what is the effect of the simultaneously increased intake of free radicals on the body, whether the increased oxygen supply has a negative effect upon oxidative stress and whether a more enduring effect can be achieved via this short-term effect. Not all patients and even fewer of the therapists were convinced.
With this in mind, about five years ago I was confronted by a completely new principle of "oxygen therapy," a German innovation: Airnergy (Spirovital therapy). My interest in this promising therapeutic application is still as strong today, as is evidenced by our collaboration over the last few years. My work can be divided into several stages:

1. Literature search:
There was a lot of literature within the company about singlet oxygen, its physical and biochemical properties, its manufacture in nature and in the laboratory, its effect upon the human body and even its toxic properties. During the course of many internal discussions and - later on, scientific debates with outside experts, it became clear to me that singlet oxygen does indeed bring about a significant initial effect of a highly complex process but that it reverts to the normal state of oxygen (triplet state) even before it is inhaled and therefore does not bring about any direct effect in the body. Much more important is the energy that is released on this reconversion, where the released energy is obviously bound in the presence of water (inhaled air) and via breathing and circulation reaches the multiplicity of intracellular mitochondria (powerhouses of the cells), where ATP (the most important energy carrier in the body) is generated.

2. My own thoughts and theories:
But how can the transferred energy increase ATP production on the one hand and reduce the formation of harmful oxygen radicals on the other? That was a central question that had to be scientifically clarified before the method could be recognised by conventional medicine and in the scientific world and by end users such as practising therapists. Several starting points were found and these are currently being checked by appropriate studies and further research.

a. 2,3-Biphosphoglycerate:
Obviously Spirovital therapy brings about an increase in 2,3-biphosphoglycerate in the erythrocytes, displacing the oxygen-binding curve to the right so that, at the same partial oxygen pressure in the

erythrocytes, oxygen saturation drops or there is an improvement in the release of oxygen to the tissues, i.e. also into the individual cells of the body and there into the mitochondria, the place where ATP is produced.

b. Increase in ATP formation:

Cellular breathing is taken to mean the functional complex consisting of glycolysis, citrate cycle and the respiratory chain.

In the first step of energy production (conversion of energy-bearing substrate into energy-poor CO_2 and water) glucose and fat are gradually broken down (glycolysis and citrate cycle). Whilst 2,3-biphosphoglycerate activates glycolysis (breakdown of glucose to pyruvate), ubichinon Q and cytochrome C are active within the respiratory chain, in which they transfer liberated electrons to an enzyme complex, cytochromoxidase, where they react with oxygen, thereby reducing it to water (chemiosmosis). This process sets in motion oxidative phosphorylation (conversion of energy-poor ADP into energy-rich ATP). There is a lot to suggest that cytochromoxidase is activated by Spirovital Therapy.

c. Inhibition of NADPH-oxidase:

In phagocytosis (incorporation of solid particles inside the cells by certain phagocytes) the O_2 requirement of these cells (macrophages and neutrophile granulocytes) increases sharply. This results in the increased release of reactive oxygen species that contribute to the destruction of phagocytised foreign bodies (such as bacteria and viruses). NADPH-oxidase acts as a catalyst for this. As important as the production of oxygen radicals is in defensive reactions, it can be harmful if too much is formed due to stress, illness, ageing or environmental damage, especially in endothelial cells, smooth muscle cells, myocardial cells and fibroblasts (NO-inactivation, decrease in endothelial reactability, precursor of heart attack and other vascular diseases). Spirovital therapy reduces the activity of NADPH-oxidase and thus results in reduced formation of oxygen radicals, in other words the anti-oxidative capacity of each individual cell is increased.

This is in clear contrast to the traditional oxygen therapies such as e.g. von Ardenne's multistep oxygen therapy.

3. Estimate of the effectiveness of Spirovital Therapy by users and therapists:

In 2007 I carried out the first scientific evaluation of the comments from Spirovital therapy end users and therapists from the preceding years, a very informative analysis, which is to be repeated in 2012 together with the numerous additional records that have been gathered in the meantime. 163 illnesses or conditions were covered at the time of the first survey. 77 per cent of the complaints related to functional areas and 23 per cent to organic areas. The degree of success did not correlate to age, the age

data ranged from 21 to 91 years. In some cases there was a temporary worsening, at the latest from the 7th day of use, but in all cases there was a clear subjective, but mostly also objective, improvement. In no case was it mentioned that Spirovital Therapy had had a continued negative effect upon diseases or conditions. Evaluation of the end-user data on the effectiveness of Spirovital Therapy in the case of organic diseases showed that it had been successfully used in diseases of the nervous system, respiratory system, cardiovascular system, muscular system, endocrine system, for metabolic diseases, for eye conditions, pain and suppressed immunity. In the case of functional conditions the end users gave a positive assessment of Spirovital Therapy for energy status (performance, activity, load tolerance, strength, motivation) well-being (quality of sleep, mood, breathing, digestion, pain, immune status), regeneration (deepening, acceleration, relaxation, pulse-lowering) and the sensory system (smell, vision, skin, dizziness).

As far as the therapists' assessments are concerned, Spirovital Therapy was expediently used in organic illnesses in dentistry, oncology, diseases of the respiratory system, the eyes, muscular system, cardiovascular system, immune system, in metabolic diseases, as an anti-ageing therapy and for pain and inflammation and following operations. According to the therapists, Spirovital Therapy is very effective for functional disorders, in particular decreased performance, compromised well-being, sleep disorders, compromised immunity and poor vision. If both the end users and the therapists observed or experienced in their own bodies a positive effect of Spirovital Therapy in the context of so many organic diseases and functional conditions, then it is necessary to look from a medical point of view to see what this is about and hence my conviction that there are clear theoretical concepts concerning the physical and biochemical use of Spirovital Therapy. The many different possible uses strongly suggest a natural healing principle, the „purification" and harmonisation of the intra-cellular matrix, of the stroma.

4. Turning away from the one-sided cellular-pathological disease model to the combined cellular-humoral-pathological disease model:

Certain phenomena of alternative therapies cannot yet be explained by conventional medical methods, for example Huneke's „Elimination of pain within seconds". This is due to the very different basic approaches (in the first case: cause-effect principle; in the second case: principle of interconnected biological systems).

According to the cellular-pathological disease model, the cell represents the smallest functional unit in the body and its impairment triggers diseases in a kind of chain reaction. The appropriate therapy is therefore to eliminate this cellular disturbance. There is no place for possible individual influences and compensations or for psychological aspects (acceptance, resistance...).

Cross-linked biological systems see themselves as a biological equilibrium of flow and as energetically „open", where information is continuously received from the surroundings and from the body, this information is processed and reactions are triggered. The body is constantly striving to maintain or restore its inner harmony, whereby electromagnetic aspects also represent an important regulator.
The underlying principle of order is Pischinger's basic regulation, the bio-cybernetic homeostasis of the inter-cellular matrix, whereby optimum function and health are achieved and maintained by the interlinking of innumerable control systems.
Generally speaking, alternative healing methods work on the stimulus-response principle. The reaction to a stimulus consists of an adequate response to the stimulus (with differing response times, local or radiated as segment therapy, systematic or autonomic as stimulation therapy).
The stimulus response includes not only the local structures but also the entire autonomic, psychological, immuno-active and hormonic system.

In the cellular-humoral-pathological disease model it is not so much the cell that is seen as the trigger point for chronic diseases and the point of application of adequate therapeutic measures but rather the inter-cellular substance (cellular stroma, ground substance). The functional fitness of the entire control system network in the body depends upon the health (integrity, activity, regulation capacity) of the ground substance. A sick, „clogged," inactive ground substance leads, via an increasing number of mistaken responses of the control system network, to a vicious circle being set up in the surrounding cells, capillary endothelia, blood cells and nerve endings, which over the course of years and decades eventually results in disease.

Over time chronic loadings can lead to imbalances (loss of homeostasis) in the cell (with the consequence of reduced energy production in the form of ATP) and via its neuro-vegetative interlinking with other cells and organs to the spread of the functional disturbance, ending in the creation of chronic diseases. This is known as „regulatory rigidity" of the stroma. Such diseases are becoming more and more frequent today because of our modern lifestyle (over-eating and poor diet, lack of exercise, constant internal and external stresses with no opportunity for dissipation). The consequences of this are functional disturbances, diseases, premature ageing and lack of well-being.

We can try to overcome this regulatory rigidity by a change in lifestyle, by many different types of alternative treatments, and, according to end users and therapists particularly effectively and enduringly by energising the individual cells of the body via Spirovital Therapy. This energisation has nothing to do with „loading "in the normal sense of the word (stress, activation of sympathetic response, increase in blood pressure, tachycardia, increasing the clotting ability of the blood), but is about increasing cellular

communication and activation of vital exchange processes between the individual compartments of the body such as permeability of the ground substance for respiratory gases and for all other essential substances and metabolites. Energy is required for this and this is provided by Spirovital Therapy so that the supply of oxygen to the cells and mitochondria is improved, more ATP (body's own energy) can be produced there and, at the same time, harmful ballast (oxygen radicals) can be removed from cells such as the ground substance. To this extent the practical observation that Spirovital Therapy can be successfully applied for many functional disturbances and organic diseases can be completely confirmed and backed up by theory.

5. Studies into the effectiveness of Spirovital Therapy:

It is not difficult to see that a young, medium-sized firm such as Airnergy cannot measure up to global pharmaceutical companies. This applies not only to marketing activities, structuring and to the number of employees but also, primarily, to the possibility of running „large-scale" pharmacological trials that are nowadays required by administrators and also by many patients. Another point to consider is that it is much more difficult to prove the effectiveness of natural healing products and this has to be done using different methods than those traditionally used for conventional medicines and procedures. The success of alternative healing methods is often indirect (overall autonomic change over, harmonisation of the ground substance) and can occur after a greater or lesser time interval.

Even more important is the fact that primarily theoretical models and associations take second place in practise and, conversely, that practical experience takes second place in existing scientific theories, as has happened time and time again with Spirovital Therapy.

In this context we should recognise the continuous efforts of the Airnergy company (via meetings and meticulous evaluation of individual case reports from end users and therapists and via „small-scale" studies, reports of practical experiences and practice studies) to join individual pieces of mosaic together to form a „stable" edifice, as it has been doing for years with a high level of commitment and increasing success.

So it might be that the individual studies, taken on their own out of the overall context, do not always meet strict scientific criteria but, nevertheless, they can represent an important piece in the overall puzzle, possibly even a „missing link". Even if strictly scientific experts cast doubt upon the results of one particular study (sometimes quite rightly), this can still, in spite of its deficits and omissions, represent an important missing piece in the understanding of the action or of the successful applicability for certain diseases.

The following comments are to be understood and interpreted with this in mind.

a. Trend towards globalisation:

Published and unpublished studies/observations and test reports are so far available from a total of 22 countries (Belgium, Chile, China, Germany, England, Finland, France, Netherlands, Hong Kong, Iran, Israel, Japan, Norway, Russia, Saudi Arabia, Sweden, Switzerland, South Africa, Taiwan, Czech Republic, Ukraine, USA), an astonishing result. In view of the large number of „new" therapies and the associated strong competition and the medium-sized structure of Airnergy, with its limited resources compared to the large global pharmaceutical players, it is all the more impressive that many experts, therapists and users are convinced of the effectiveness of Spirovital Therapy.

b. Possible areas of application:

In principle Spirovital Therapy is a measure that - as with many alternative healing methods - targets the whole body rather than an individual organ. According to the conventional view, the functional disturbance or basic disease is initiated by an under-supply of energy and therefore reduced ATP formation of individual (especially predisposed) organs or the whole organism, a process that progresses over years and decades.

In this context Spirovital Therapy serves to „purify" the ground substance (and therefore promote better permeability for respiratory gases and vital substrates), promote better oxygen supply to each individual cell, better detoxification of oxygen radicals and increased ATP production, in summary promote better oxygen supply to and oxygen utilisation by the individual cells or - in other words, their energisation. Spirovital Therapy is a basic therapy that can be used for all energetic disturbances to the organism and represents the basis for enabling other treatments to work or - even better - returning the body to a state where it is able to help itself and rectify the existing disturbance.

This fact explains why Spirovital Therapy can be used in so many contexts, often as a stand-alone therapy but also as an auxiliary, preparatory or ongoing additional measure to support other therapies.

The more serious or the further advanced the disorder, the less frequently Spirovital Therapy is successful on its own and so more patience is required to get better. Nevertheless, there are many case descriptions where even serious disorders, especially subjective disorders such as pain, have significantly improved after just a few applications.

c. Practical disease-related successes:

- Reduction in oxidative stress or increase in anti-oxidative capacity
- Acute vagal effect upon autonomic regulation
- Improvement in fatigue symptoms in cancer patients
- Increase in physical endurance
- Immune activation
- Increased concentration
- Increase in creatine phosphate and ATP levels
- Improvement in sleep disturbances
- Improvement in the subjective symptoms of multiple sclerosis
- Increase in maximum performance
- Acceleration of regenerative processes
- Improvement in the clinical picture of macular degeneration
- Improvement in circulatory disturbances (cardiac muscle, brain, legs)
- Pain reduction
- Activation of cellular physiological processes
- Reduction in cholesterol level
- Improvement in subjective symptoms and objective findings in COPD and bronchial asthma
- Treatment of pressures sores

These are a few of the important areas where Spirovital Therapy has been successfully used. This list will certainly be extended when all of the available documents are evaluated. I have made a theoretical analysis of the following clinical pictures with regard to the successful use of Spirovital Therapy and, in this context, produced an anonymised evaluation of all of the patient documents available in the company and have even added a few individual case reports with the permission of the patients in question:

- Burnout
- COPD
- Skin
- Multiple Sclerosis
- Sleep disturbances
- Heart rate variability

Because it is currently in the news (nuclear reactor accident at Fukushima/Japan), to represent the ubiquitous range of potential uses and all of the Spirovital Therapy studies carried out, let me present

the results of a study from the Ukraine on 967 children affected by the Chernobyl disaster.

Following application of Spirovital Therapy to supplement (necessary) conventional treatment it was found that there was a noticeable subjective and objective improvement in symptoms in all examined (affected) organ areas (cardiovascular system, respiratory tract, gastro-intestinal tract, metabolism, nervous system and urogenital system) for each individual child. The success rate using conventional treatment alone, without the use of Spirovital Therapy (control group), was between 84 and 99 per cent and in some cases the treatment had to be prematurely discontinued because of severe side effects.
Where they were given simultaneous Spirovital Therapy all children said they had recovered from their previous headaches, joint and chest pains, and there was observed to be an improvement in general condition and a (desirable) weight increase, recovery from nose bleeds and catarrh, normalisation of previously pathological blood values and a marked reduction in the level of caesium-137 causing the symptoms compared to the control group.
It is worth mentioning that the combination of Spirovital Therapy with other conventional treatments resulted in a 100 per cent improvement in all affected organ systems. It should at least be pointed out that 100 per cent success might also have been achieved by the oral administration of energised water, which is produced in the device at the same time as it is being used, and/or the newer, more effective devices of the current generation without the simultaneous application of the basic conventional therapy.

d. Official certification:

- Ec certification as a medical device:

In compliance with EC directive 93/42 an accreditation procedure must be initiated for each medical device and a positive assessment is required before it can be used on patients. This requires all possible documents, including a procedural and product description, a clinical evaluation, a risk analysis and documentation for the device. With my paper „Demonstration of the relationship between inhaling energised air and harmonising the autonomic nervous system by measuring heart rate variability", which I wrote in 2009, I was able to provide the decisive contribution to accreditation by the Government President in Düsseldorf. Spirovital Therapy is therefore Ec compliant by law, examined and officially authorised as a medical device.

- NADA (National Anti-Doping Agency):

Because of certain experimental results (increase in maximum oxygen uptake capacity) and due to misinterpretation of the results (oxygen therapy) the National Doping Agency (NADA) and the International Doping Agency (WADA) took an interest in Spirovital Therapy and wanted to classify the procedure as a forbidden method and put it on the doping list. Indeed this would (indirectly) have constituted reco-

gnition as an effective therapy but was not in the interests of the firm, which sees an important clientele amongst sportsmen and women. In a laborious process it was possible to explain to the NADA and WADA about the actual physiological-biochemical aspects of Spirovital Therapy and this was successful in that it was not classified as a forbidden method (reason: ambient air is irradiated with UV light and then inhaled via a nasal cannula; the determining factor was that the inhaled air is ambient air).

6. My personal introduction to Spirovital Therapy:

„It seens like a miracle!", reported a patient with advanced Parkinson's Disease: „For years I have gone from doctor to doctor, I have tried my luck with complementary therapists, all without success, I became more and more doubtful until I was beginning to get depressed. And now, since using the Spirovital Therapy I have seen an improvement in the duration of my sleep and my ability to fall asleep, my concentration has increased significantly against objective criteria and the volume of my voice has largely normalised. It is true that there are no significant changes in the problems typical of the disease (stiffness, shaking, slowing down), but I cannot speak highly enough of the considerable neuro-biological, psychological affects such as feeling of happiness, self-worth, motivation, assertiveness, quality of life and overall „joie de vivre." This is the report from one person but can be backed up by the experiences of other patients with a wide range of functional disorders and with very different clinical pictures! I became curious about this new treatment method, even though I was initially sceptical. Since this experience about five years ago I bought an „Airnergy" device for energising inhaled air and I use it as often as possible, initially out of scientific curiosity but then because of the growing recognition that stimulating the whole body via Spirovital Therapy has a prophylactic, therapeutic and rehabilitative effect. Allergic symptoms (hay fever that I had suffered with for many years) have hardly been noticeable over the last five years. Muscle soreness after hard physical exercise (cross-country runs, cycling tours, gardening) hardly occurs any more. For a long time now I have never been short of energy, even after not much sleep. Even colds, insofar as I still get them, are no longer accompanied by the bad headaches I used to suffer. Fortunately I have not had any diseases, which could have been improved by using Spirovital Therapy, but prevention is also important...

I have also had good experiences, particularly, when combining it with alternative healing methods, for example drinking the energised water that is produced as a by-product of the inhalation method, but also eating local, seasonal food, physical training (running, cycling, gymnastics), a lifestyle that avoids or compensates for stress.

Spirovital Therapy obviously produces effects. This is confirmed by scientific principles from numerous countries. Over one million uses every year in Germany alone are a clear indicator.

My own theory as to why it works is that certain general functional disturbances that affect the whole organism can be seen as the basis of all chronic diseases. Diseases then manifest themselves locally in the weakest spot, for example cardiovascular system, liver, joints, etc. Treating the diseased organ alone does not offer much prospect of recovery; only after cleaning up the environment can a healing process set in. A lot of alternative healing methods have this affect, for example the energising stimulation of respiratory air. This new basic therapy for practically all chronic diseases, in particular those accompanied by energy deficiency, is gaining increasing recognition, even in conventional medical circles - as a supplement, for pre or post treatment, for compensating adverse side-effects of invasive measures and in particular in the support of conventional methods. Many people have already benefited from it over the past few years and many more will follow in the future.

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Medical and Scientific

Compendium Spirovital Therapy with Airnergy®

Dr. med. Susanne Klimpel
Specialist in Clinical Pharmocology

1. Preamble

There are not many points of agreement between the many and varied scientific, conventional-medical, anthroposophic, Far Eastern and homeopathic medical teachings.
Nevertheless, all theoretical and practical applications of these very different doctrines are based on one central premise about human nature: the capacity of humans for self healing.
All teaching are united in their unassailable consensus that in all the different stages of health and illness in body and soul, the balance of physiological and psychological processes are inseparably linked and only perfect balance, inner homeostasis, can create the conditions for the complete self-healing process of the human organism, which has so far not been completely understood, to take place.

The sports' clothing company ASICS uses the slogan: ASICS - Anima Sana in Corpore Sano „A healthy soul in a healthy body". The quote is a modified version of that attributed to the Roman writer Juvenal: Mens sana in corpore sano (Saturae (Juvenalis)/Liber IV/Satura X). „A healthy mind in a healthy body" - a much used quote that is enduringly true.

The manifold processes of self healing usually occur unnoticed. Repair processes are constantly taking place at cellular and sub-cellular levels to maintain inner homeostasis, e.g. keeping the acid-alkali balance constant or the controlled killing of diseased cells (apoptosis). Many other self-healing processes can be seen and experienced, for example blood clotting and healing of surface skin wounds or the fighting of bacterial and viral infections, experienced as flu-like symptoms.

But what if the body's own self healing ability is disrupted?

The more varied the discussion about the possible causes of disrupted self healing ability, the more colourful the spectrum of diagnoses of the resulting illnesses, then the more absurdly disparate the recommended interventions, depending upon the therapeutic-philosophical belief system.

To give just one example: the use of multi-vitamin preparations, in particular those that are offered cheaply in supermarket chains in hopelessly low dosages and pointless compositions. It is easy to see from this example how desperate people are for a quick fix to alleviate or even completely cure their complaints. Human beings have forgotten how to draw on their own internal energy to sense and then decide whether the symptoms are physiological or psychological or even psychosomatic in nature. Thus they lose the basis for their own natural ability for self healing, they ignore the signals that their body is constantly sending them and hope for a cure from a single tablet - and as quickly as possible.

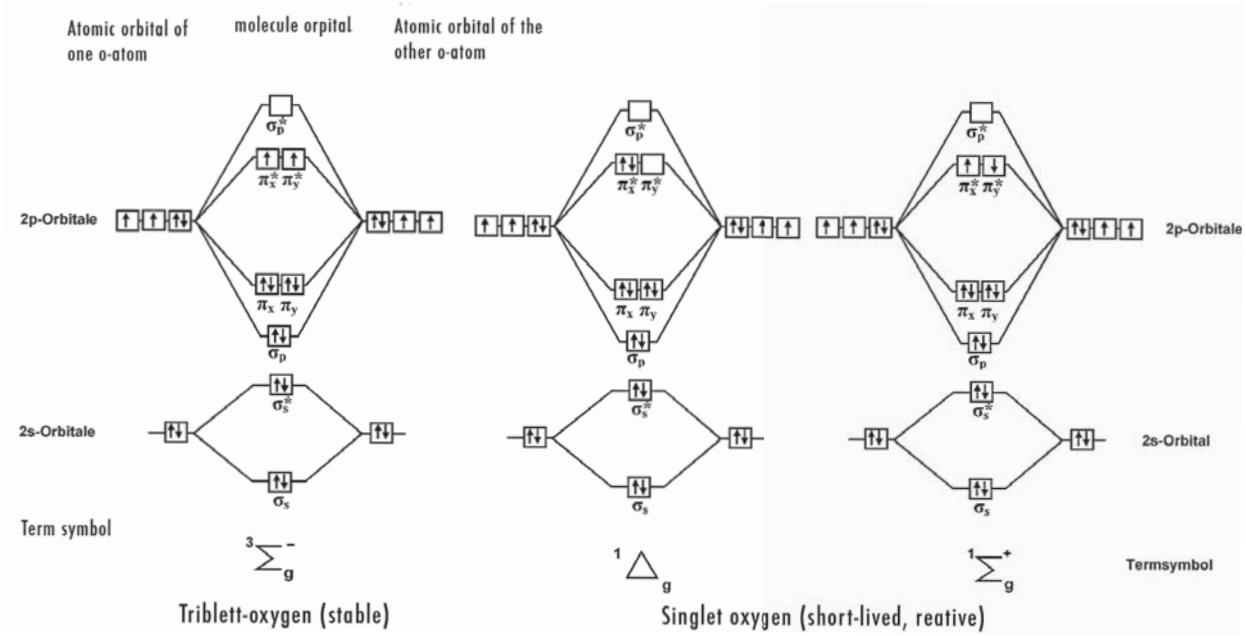
And it is precisely here that we find the basis for consensus of all healing methods and procedures: in the agreement to go back within the person! Back to search for the cause of the disturbance and there to reactivate the person's innate self-healing abilities.
Whoever thought that „Airnergy-energy from inside" was just a clever advertising slogan was wrong.

2. Introduction

Since 2000 the Airnergy company has been manufacturing breathing devices for preventative, therapeutic and complementary-medical Spirovital Therapy. For the first time this form of therapy utilised the previously unexploited biochemical behaviour of natural oxygen in the air and made it technically available for humans. With unexpectedly positive affects upon the human self-healing process, Airnergy bravely entered new medical territory and with outstanding success. As in all that is original and natural, the maximum potential of the effect lies in its simplicity. This highest level of natural efficiency is reflected in the concept of Spirovital Therapy on a therapeutically usable level - with a mechanism that is to be found everywhere in nature and which unfolds its full effectiveness without the need for any additional chemicals or changes.

The breathing device sucks in ambient air via an external air filter, which also acts as a dust and bacterial filter, on the rear of the device and carries it under the effect of light of a defined wavelength through specially-coated catalyst.
This process is described as a chemical luminescence process and converts the oxygen present in the air from the triplet state ($^3O_2$, non-reactive) into singlet oxygen ($^1O_2$, reactive).

Figure 1: States of oxygen



The air then flows through a glass bottle filled with water to be humidified. The thus humidified air passes once again through Airnergy catalysts. Within < 0.23 msec. the oxygen in the water reverts to its original state, the triplet state. The energy that is released on return to the triplet state is absorbed by the water molecules, which are excellent reaction partners for $^1O_2$ states. Since singlet oxygen is stable for hours in air but only for fractions of milliseconds in water, a reaction of the singlet oxygen with the O-H group of the water is probable. The energy is therefore directly transferred to the water molecules. Consequently water molecules are of elementary importance in the Airnergy principle: in summary it can be stated that, because of the short-lived dwell time of oxygen in the singlet stage in an aqueous environment, the inhalation of excited oxygen can be ruled out. The energy that is released is taken up by the surrounding water. Consequently atmospheric oxygen is inhaled, enriched with energised water molecules (Hottenrott et al.[5]). The air humidified with water (H_2O) in the Airnergy device flows at a rate of approximately 4 l/min through a stainless steel adaptor on the front of the housing, to which a nasal cannula can be connected.

The water in the glass bottle should be chlorine-free drinking quality. Low-mineral, still water is suitable.

3. Medical and scientific overview

It would be ideal for both reader and author alike if one could explain the effects of Spirovital Therapy, starting on the cellular level right up to the level of the whole physiological system, to the causes producing symptoms and thus be able to summarise the entire spectrum of illnesses where the demonstrable effect of Spirovital Therapy supports the self-healing process and to list and describe them in detail. The ideal, and also Airnergy's minimum objective, is not yet completely fulfilled. Although there may still be gaps in the causal chain, there are, nevertheless, theoretical bridges that can begin to explain the internal actions of Spirovital Therapy.

First of all Spirovital Therapy is classed amongst inhalation therapy methods as an aerosol method. Thus one can imagine that the therapy has both topical and systemic effects.

In keeping with the basic scientific status of the pre-clinical and clinical data, these theories, based on physiological processes, currently offer various, but nevertheless narrowed down, attempts at better understanding of the effectiveness of Spirovital Therapy.

3.1. NADPH-oxidase: production of free radicals

The oxidative or respiratory burst is the release of reactive oxygen species (oxygen radicals) by neutrophile granulocytes and macrophages in phagocytosis. In 1933 Baldrige and Gerhard discovered that in phagocytosis the oxygen consumption of the granulocytes increases 50 to 100-fold (Baldrige et al.[2]). Associated with oxygen consumption is the gradual development of various reactive oxygen species. The process is catalysed by the enzyme NADPH-oxidase. A stimulus activates the granulocytes and their reaction is initiated. With the agency of NADPH-oxidase the hyperoxide anion O_2- is produced from oxygen and NADPH. The highly-reactive hyperoxide anion itself is the starting product for the synthesis of a series of further reactive oxygen species. With these reactive oxygen species it is possible for the neutrophile granulocytes and macrophages to carry out the intra-cellular digestion of phagocytised foreign bodies, such as pathogens. These oxidising agents react amongst other things with proteins, nucleic acids and other cell components of the pathogen. Similarly they deactivate the body's own, endogenous protease inhibitors, which prevent the breakdown of proteins.

The secretion of NADPH-oxidase increases under stress and under pathological conditions, in particular in the endothelial cells, the smooth muscle cells, fibroblasts and myocardial cells. This results in NO deactivation and a decrease in endothelium-dependant vasodilation (Jung K.[7]).

One theory states that Spirovital Therapy inhibits the activity of NADPH-oxidase and therefore reduces the production of reactive oxygen species[1],[3],[6],[8].

3.2. Increasing intra-cellular ATP production

Aerobic respiration (cellular respiration, internal respiration) is defined as the metabolic processes in cells of living beings, whereby the hydrogen atoms arising from various oxidative metabolic processes and bound to special carriers are oxidised. Here molecular, elementary oxygen (O_2) serves as the oxidising agent and is reduced to water during the process. The purpose of aerobic respiration is to produce energy in the form of adenosene-triphosphate (ATP).

The term „aerobic respiration" is used in particular for the biochemical processes of the respiratory chain in the internal membrane of the mitochondria, at the end of which ATP is synthesised. The respiratory chain is an important part of the energy metabolism of most living things and, on the one hand, is a metabolic pathway: a chain of consecutive biochemical redox reactions. It serves to provide the living thing with energy. On the other hand, the term is also used to describe all of the protein complexes that take part in the metabolic pathway. The respiratory chain is a special case of an electron transport chain and, together with chemiosmosis, forms the process of oxidative phosphorylation.

The net outcome of the exogenic oxidation of hydrogen is water. With the help of a series of redox processes that occur on the internal mitochondrial membrane, enzymatically (NADH, $FMNH_2$ and $FADH_2$) supplied electrons are used to synthesise the universal energy currency of the cell, ATP, from ADP and phosphate (oxidative phosphorylation). The respiratory chain is located in the internal mitochondrial membrane. Electron transport chains consist of a series of interconnected redox molecules that are able to take in or give up electrons. Via this chain electrons are passed on from a higher energy level to a lower one and thus go downhill, so to speak, in steps, whereby the individual redox molecules have an ever decreasing energy level. One after the other the enzyme complexes I to IV and hydrogen or electron carriers ubichinon (co-enzyme Q) and cytochrome C, which are stored in the internal mitochondrial membrane, take part in the reaction chain.

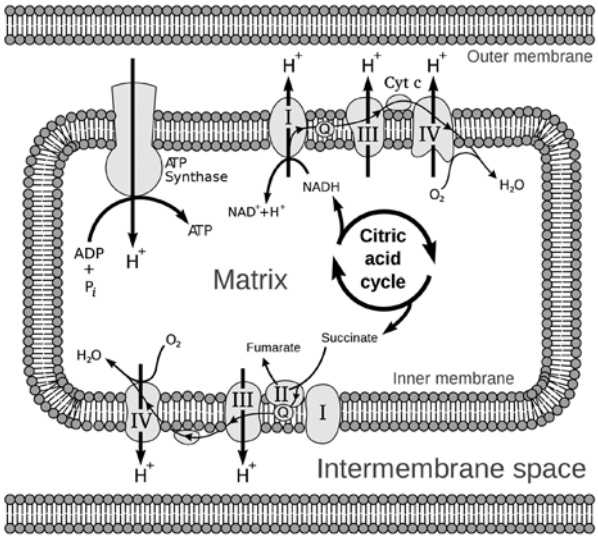
The proteins that take part in the electron transport chain (complexes I-IV) and the electron carriers ubichinon and cytochrome C form a complex redox system.

In addition to its outer membrane, a mitochondrium also contains an inner membrane. The space between these two membranes is known as the intermembranous space (perimitochondrial space).

Four of the five complexes of the respiratory chain completely span the internal mitochondrial membrane, whilst complex II ends blind. A proton gradient is created between the intermembranous space and the inside (matrix) of the mitochondrium, which is then used in complex V to synthesise ATP.

A further theory is that Spirovital Therapy is able to increase the intra-cellular production of ATP via an interaction with the enzyme cytochrome C-oxidase [1], [6], [8].

Figure 2: The mitochondrium



Diagrammatic representation of the respiratory chain with the complexes (I, II, III and IV), and ATP synthesis (complex V) in the internal membrane of the mitochondria. Above: Feed of electrons via complex I through oxidation of NADH to form NAD^+. The electrons are transported via co-enzyme Q to complex III and then via cytochrome C to complex IV, where they reduce oxygen (O_2) to water. Below: Feed of electrons via complex II through oxidation of succinate to fumarate. Here again the electrons are transported via co-enzyme Q, to complex III and on via cytochrome C to complex IV where they reduce oxygen (O_2) to water. (Source: http://de.wikipedia.org/wiki/Atmungskette)

Complex I: NADH: ubichinon-oxidoreductase or NADH-dehydrogenase.
Complex II: Succinate: ubichinon-oxidoreductase or succinate-dehydrogenase.
Complex III: Ubihydrochinon (Ubichinol): cytochrome C-oxidoreductase or cytochrome C-reductase.
Complex IV: Cytochrome C: O_2 oxidoreductase or cytochrome C-oxidase.

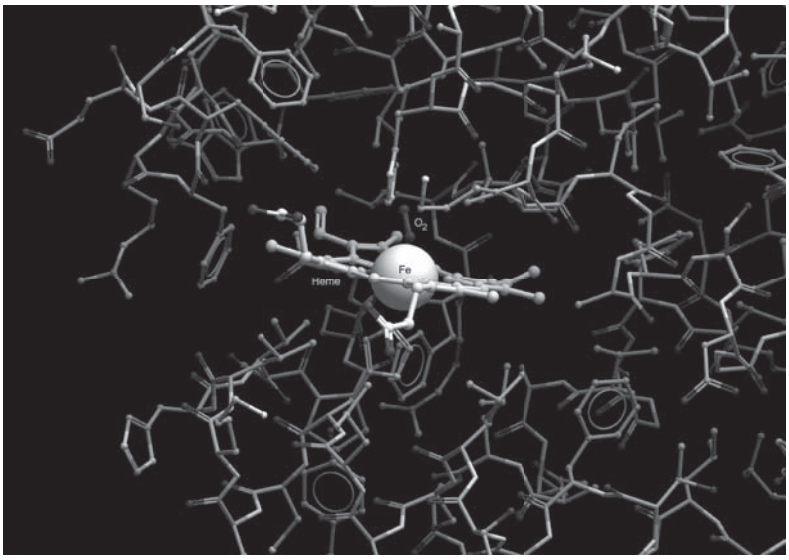
Cytochrome C is oxidised on complex IV and an electron is thereby transferred to the complex. After the successive transfer of four electrons (e^-) a bound oxygen molecule can be reduced to form two water molecules (H_2O). The four protons (H^+) that are required for this are taken from the matrix. The energy that is released from the reduction of oxygen to water is used by the enzyme to pump four protons per oxygen molecule from the matrix via the internal mitochondrial membrane into the intermembranous space. **Cytochrome C-oxidase** is a transmembranal protein with two haeme a molecules (haeme a and haeme a3) as prosthetic groups and two copper centres (CuA and CuB) as co-factors.

The enzyme is responsible for almost the entire oxygen consumption of all oxygen-breathing organisms.

Excursus: Chemistry and biochemistry of haemoglobin (Hb) and myoglobin (Mb)

Haemoglobins (from the Greek αἷμα = blood and the Latin globus = ball) (Hb) are ferruginous, oxygen-transporting proteins that are found in the red blood cells (erythrocytes). They take up oxygen in the lungs and distribute it throughout the body. The oxygen is bound in an iron complex of proto-porphyrin IX (haeme). Haemoglobins are protein complexes from four sub-units (2 α, 2 β), that each contain a haeme group embedded in a globin. The heame group is also responsible for the red colour of haemoglobin.

Figure 3: Ball model of the haeme pocket of the haemoglobin β-sub-unit with haeme, iron and dioxygen



(Source: wiki.verkata.com/de/wiki/Hämoglobin)

The oxygen's journey from the lung into the mitochondria starts with its binding to haemoglobin.
In the muscle cells it is transferred to myoglobin that has a greater binding constant for O_2 than has Hb. From this the oxygen molecule is eventually transferred to cytochrome C-oxidase (CcO), in which the oxygen affinity is highest. In the active centre of CcO, the last enzyme of the respiratory chain, **oxygen is reduced to water.**

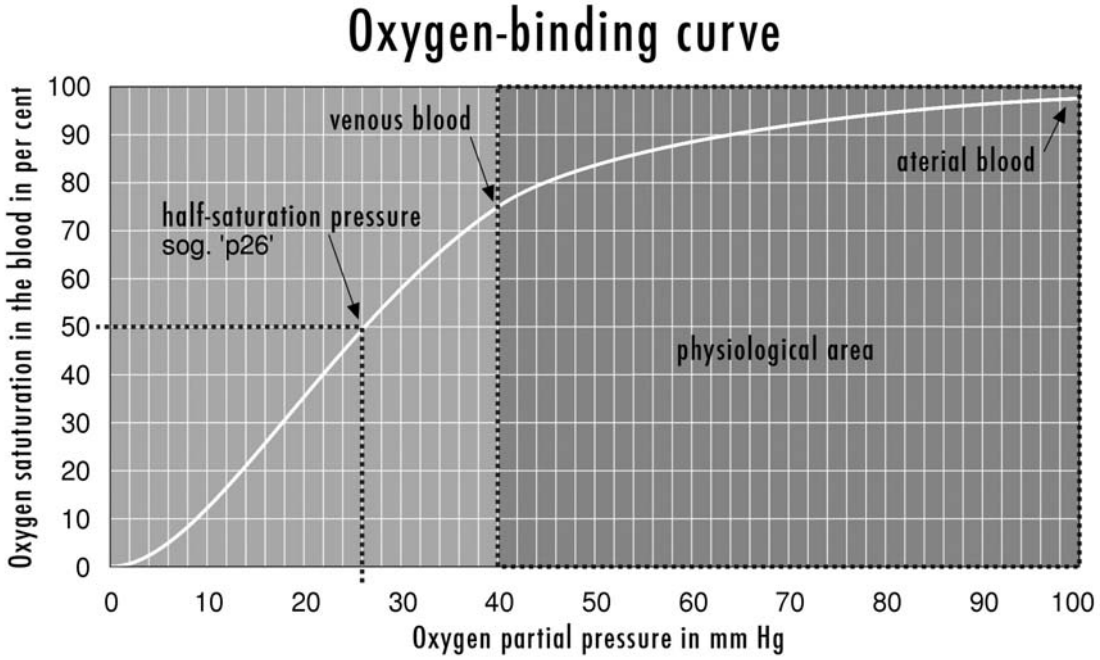
Haemoglobin is a highly-soluble, globular protein. Its binding curve has a remarkable sigmoidal (s-shaped) course. One would normally expect that oxygen loading would increase with increasing partial oxygen pressure as in myoglobin, at first strongly and then gradually more slowly (hyperbolic

course). For haemoglobin the oxygen binding curve in the range of partial oxygen pressure existing in the lung is unusually flat and in the range of partial oxygen pressure existing in the tissue it is unusually steep. The flat course of the binding curve at the end prevents a greater decrease in oxygen saturation with age, in lung function disorders and at altitude and the steeper course in the middle ensures that a lot of oxygen is released with a drop in venous partial oxygen pressure (Schmidt, Thews[10]; Schütz E. et al.[11]).

The oxygen binding curve is moved to the right along the x-axis by:

- An increase in temperature
- Lowering of the pH value
- **An increase in the concentration of 2,3 bisphosphoglycerate in the erythrocytes**
- An increase in the concentration of carbon dioxide

Figure 4: Oxygen-binding curve



The oxygen binding curve (also saturation curve) displays the characteristic sigmoidal (S-shaped) course (Berg J. M. et al.)

The movement to the right results in the **haemoglobin releasing oxygen more easily**. An example: A working muscle uses a lot of oxygen for contraction. Since it converts some of the energy into heat, the temperature in the working muscle increases. It also releases lactic acid (lactate), **which lowers the pH**. More carbon dioxide is used by the increased metabolism: **due to the local effects the muscles can take more oxygen from the blood.**

- The muscles have myoglobin, which has a higher affinity for oxygen.
  It serves as an oxygen store.

A newly-discovered function of enzymes of the Mb and Hb family seems to be the disposal of NO. They can oxidise NO to form nitrate (see also Chapter 3.1.).
Haeme proteins occurred in evolution well before the presence of oxygen in the atmosphere. The NO-binding properties have lead to the hypothesis that the original haemoglobin, which is thought to have appeared approximately 3,500 million years ago, served for NO-metabolism and that O_2-transport is a function that did not evolve until later.

3.3. Increase in 2,3 bisphosphoglycerate in the erythrocytes

2,3-bisphosphoglycerate (2,3-BPG), previously known as 2,3-diphosphoglycerate (2,3-DPG), is formed from 1,3 bisphosphoglycerate in the erythrocytes in the Rapoport-Luebering cycle, a byway of glycolysis. Under physiological conditions approximately 20 per cent of the 1,3 phosphoglycerate arising in the erythrocytes during glycolosis is converted to 2,3 BPG, the remaining 80 per cent following the main route of glycolysis via 3-phosphoglycerate.

2,3-BPG plays a decisive role in the regulation of haemoglobin (Hb).
One haemoglobin molecule can bind four oxygen molecules. From a purely statical point of view it would be expected that the effort to bind further oxygen molecules would decrease with each oxygen molecule already bound. However, experiments have shown that the opposite is true and that oxygen affinity increases with increased loading (positive cooperativity). In order to understand this, it is necessary to know that haemoglobin occurs in two forms, an R (relaxed) form and a T (taut) form. Both forms are in an equilibrium with each other that depends upon the surrounding medium. In the unloaded state the T form is almost exclusively present. Now if the haemoglobin takes up an oxygen molecule, this displaces the equilibrium in favour of the R form. Haemoglobin in the R form has a 70x greater affinity for oxygen than in the T form, so that increasing oxygen affinity is achieved with increased loading whilst, conversely, unloading decreases oxygen affinity and promotes the further release of oxygen. Also the oxygen-binding R form is stabilised by a low carbon dioxide content and a high pH value whilst the oxygen releasing T form is conversely promoted by a high carbon dioxide content and a low pH value. This effect is important for the functioning of haemoglobin as an oxygen transporter, as it allows the targeted uptake in the high oxygen content in the lungs and release at a high carbon dioxide content and low pH value in metabolically active tissues. **If 2,3 BPG binds to the taut form of haemoglobin, this form is stabilised** and cannot change into the oxygen-attractive R form.
Therefore oxygen is still released at a higher partial pressure of haemoglobin and without the

2,3 BPG that stabilises the T form.

2,3 BPG hinders further oxygenation of haemoglobin or it facilitates the release of the oxygen bound on the Hb. Thus the equilibrium of the oxygen-binding curve is moved to the right (Figure 4: Oxygen-binding curve), whereby, at the same O_2 saturation, pO_2 is increased or, at low O_2 saturation, pO_2 remains the same so that more oxygen can be released to the surroundings (Jung K. Energisation of respiratory air. Extract from Natur-Heilkunde Journal, Nov. 2008). This represents a very economical principle of better O_2 supply. Without the need for additional work by the heart or lungs more O_2 is made available to the tissues by better utilisation of the existing capacity.

A further theory as to the mechanism of Spirovital Therapy assumes that there is an increase in the 2,3 BPG content in the erythrocytes and therefore a movement to the right of the oxygen binding curve[12].

In stored blood 2,3 BPG has to be replaced by an analogon such as glucose or inosine because it is unstable and disintegrates quickly. In the body it is constantly being resynthesised (see also Chapter 6. III.).

3.4. Heart rate variability measurement

In contrast to the previously described basic scientific, physiological metabolic processes, one often finds surrogate parameters in literature. In clinical studies surrogate parameters (from the Latin surrogatum = substitute) are a measured variable, the influencing of which can indicate the effect of an intervention upon a super-ordinate medical phenomenon, e.g. the occurrence of a disease or a symptom. The minimum requirement of a surrogate parameter is that there is already a statistically significant correlation between it and the phenomenon. However, this requirement is not sufficient. Usually the surrogate parameter is easier and quicker to determine than the phenomenon itself and is therefore often preferred for financial reasons. It can also be that the relevant phenomenon is not measurable but can only be recorded via surrogate parameters. Both the phenomenon and also the surrogate parameters can be defined as so-called **end points** of the study, therefore as target variables that can be used to interpret and evaluate the outcome of the study.

It should be noted that the effect of a therapy upon a surrogate parameter is only transferrable to a limited extent to the medical phenomenon per se, because, firstly, a statistical correlation does not necessarily prove causality and, secondly, the occurrence of diseases almost never depends upon one single disease-changing parameter. Reputable study presentations point this fact out, less reputable ones gloss over it.

Since, in the final analysis, a medical treatment is only superior to another if it prevents or heals diseases and alleviates symptoms and not just because it influences laboratory values, a good study design defines the greatest possible number of clearly determinable medical events as an end point and the fewest possible surrogate parameters.

A common surrogate parameter that is used in the clinical studies for Spirovital Therapy is heart rate variability: the variability of a person's heart beat indicates its regulation band.

The variability of a healthy heart is at its greatest at rest. With the start of physical or psychological loading the mean value of heart frequency increases and variability decreases. The higher the loading, the clearer this trend becomes. Each person has an individual heart rate variability, according to his/her age, gender, genetic predisposition, fitness and lifestyle. Nevertheless, it is possible to establish average values and nominal values within certain limits. Thus, at rest, variations of more than 100 msec. in heart rate sequence indicate a normal adaptation of the heart to external or internal stimuli, such as are encountered every day. Under chronic stress the sympathetic activity predominates and this can clearly be seen in a lower HRV.

On the basis of HRV measurement, a further theory postulates a harmonisation of the autonomic axis by Spirovital Therapy and thus points at an influence in the sense of optimisation of basic regulation[5].

4. Presentation of the study data

Starting with pre-clinical data from cellular experimental concepts through to animal experiments, below is a summarial overview of the available clinical data for humans. There are numerous further studies that have looked at Airnergy but, because they did not comply with strict scientific procedures regarding planning, performance, evaluation and/or discussion, they were excluded from a detailed analysis in this basic scientific compendium, which should be characterised by the quality of its data rather than the quantity.

4.1. Cellular experimental work

In a study[1] carried out by Düsseldorf University whole blood, isolated human neutrophile granulocytes (PMNs) and human epithelial cells were incubated in the presence or in the absence of microbial toxins or viable pathogens and apathogenic micro-organisms. The immune cells were either pre-treated with Airnergy or left untreated as controls. The measurement parameters of **ATP formation, IL-8 generation** and **formation of reactive oxygen species** were defined as end points.
The results of the study showed a clear effect of Airnergy pre-treatment of the cells compared to the placebo cell population.
It was possible to show that Airnergy **significantly increases intra-cellular ATP formation**, promotes resistance to micro-organisms by a **significantly increased IL-8 production** and **minimises the generation of reactive oxygen species** during the immune defence process.

The work of von Hultén et al.[6] provides a further contribution to the study in monocytes. The working group looked at the energy that is given off by excited singlet oxygen in the relaxation phase to the basic triplet state (known as singlet oxygen energy). The aim of this study was to investigate the effect of the singlet oxygen energy transfer as lightening or as energy transfer in air on the production of reactive oxygen species (ROS) by human monocytes with the aid of chemical luminescence reinforced by isoluminol. The group showed that monocytes incubated with singlet oxygen energy and then stimulated with PMA (phorbol myristate acetate) showed a significant **reduction** in the secretion of **reactive oxygen radicals (ROS) by 60 per cent** compared to the control cell population. In detail the stimulation with PMA results in activation of the otherwise inactive NADPH-oxidase. When competent substances such as superoxidase-dismutase (SOD) or catalase were added to cells treated with singlet oxygen to detoxify superoxide anions and hydrogen superoxide further surprising results were obtained. Since, when both substances were added, no difference could be found between the control cells and the cells treated with singlet oxygen energy, this suggests that **singlet oxygen energy inhibits the activity of NADPH-oxidase**, which is primarily responsible for the formation of superoxide anions.

The transfer of singlet oxygen energy lessens oxidative stress in that it inhibits the oxidative burst (release of ROS by neutrophile granulocytes and macrophages in phagocytosis) of monocytes activated by NADPH-oxidase. (see also Chapter 3.1.).

4.2. Animal experimental works

Lundberg et al.[9] investigated the effect of singlet oxygen energy in vivo in animal experiments. In a study carried out in 2002 the group were able to show in a placebo-controlled study on the prepared muscle of a rat, that an application of singlet oxygen energy during an ischaemia and subsequent post-ischaemic reperfusion had a convincingly positive effect. This statement was made on the basis of the measurement of ATP and phosphocreatine (PCr) after 4-hour ischaemia and 1-hour post ischaemic reperfusion with the following results.

Table 1: Percentage change compared to the control value

Time Point relative to Ischaemia	Parameter	Control Group	SOE Group
Beforehand	ATP PCr	100 % 100 %	100 % 100 %
After 4 hrs	ATP PCr	51 % 26 %	72 % 26 %
After 1 hr. reperfusion	PCr ATP	51 % 57 %	71 % 79 %

The positive effect of the singlet oxygen energy treatment could consist of both an **increased capacity of the energy store or decreased production of oxygen radicals.** As already described above in a study by Hulten, the singlet oxygen energy effect on the reduced production of ROS can at least to some extent be explained by an inactivation of NADPH-oxidase [8].

4.3. Clinical works

With 15 amateur sportsmen as test subjects, the influence of a pre-exercise Airnergy treatment upon endurance performance was investigated in 2007 by Dr. Wienecke in the SALUTO Centre for Health and

Fitness in Halle/Westphalia, founded and run by him [12]. The subjects completed a 60-minute session on a treadmill, after which they inhaled on a placebo or a verum Airnergy device, without knowing which. There was always one day without endurance loading between the cross-over inhalations. The **results** of this study showed **a highly significant reduction in blood lactate values** and heart frequency values after the use of **Spirovital Therapy** compared to the placebo treatment. In addition to this, the subjects described a clear improvement in performance after using Spirovital Therapy following unblinding. Based on the positive results obtained, the same study was carried out with 16 subjects under identical conditions before a bicycle ergometer trial. The results of this test confirm the findings from the previous test. It can therefore be concluded that inhalation of Airnergy 60 minutes before an endurance activity brings about a saving in metabolic activity, reproducible in the reduction of the measurement parameters of blood lactate and heart rate. The author does not offer any hypothesis as to the possible underlying physiological-biochemical processes that could have produced these remarkable results.

In a **randomised, placebo-controlled, double blind** study on 40 sports students Hottenrott et al.[5] investigated the effect of a single **21-minute Airnergy** treatment in respect of an acute reaction on **autonomic regulation**. The starting hypothesis was that activation of the respiratory air with Airnergy has effects upon the cardio-respiratory system and that these would be measurable via the surrogate parameter of **HRV.** The study design included 3 phases: 10-minute rest phase, 21-minute intervention phase using Spirovital Therapy, 10-minute post treatment phase.
The results showed a significant interaction effect in the verum group comparing the intervention phase with the subsequent post intervention phase for the parameters LF (low frequency, sympathetic nervous system), HF (high frequency, parasympathetic nervous system) and the LF/HF ratio (sympathetic/parasympathetic). No difference was found for the CSI (cardio stress index). In the verum group LF (low frequency, sympathetic) increased very significantly after the intervention phase, whilst HF (high frequency, parasympathetic) fell significantly. There was no significant change for LF and HF in the placebo group. In both groups the average heart rate dropped significantly from the pre-phase to the intervention phase and in the post phase it remained at the same level as in the intervention phase[5].
The significantly higher HF percentage (high frequency, parasympathetic) during the intervention phase with the verum device compared to the placebo device and the subsequent drop in the HF percentage (high frequency, parasympathetic) with simultaneous drop in the LF percentage (low frequency, sympathetic) in the post phase clearly demonstrates the acute vagal effect of Spirovital Therapy upon autonomic regulation[5].

In his report, Björn Carlmark[3] describes the effect of breathing singlet oxygen (activated air) and the resulting effects upon selected blood parameters in **10 healthy test subjects**. The study lasted

four weeks. After an initial blood sample had been taken each subject breathed **activated air** for 12 minutes **3x/week** in the first week of the study. In order to avoid adverse reactions in the healthy volunteers as far as possible, the breathing time was only increased to 20 minutes in the following week. Apart from the initial blood sample, further samples were taken at points 2 and 4 weeks after the start of the study under fasting conditions. A total of 32 blood parameters were investigated (cholesterol, triglyceride, glucose, fructosamine, uric acid, urea, creatinine, albumin, haptoglobin, CRP, iron, total iron binding capacity, transferrin, lactate dehydrogenase, ASAT, ALAT, gamma glutamyl transferase, ALP, phosphate, calcium, potassium, sodium, HDL, LDL). In addition the Total Antioxidative Status (TAS) in the blood was determined using a commercial kit, the enzyme activity of gluthathion-peroxidase (GSH-Px) and of superoxide-dismutase (SOD) were also determined in whole blood samples.
No adverse reactions at all were reported amongst the subjects during the study, on the contrary the majority of subjects noticed positive effects, primarily they felt less tired. Most of the 23 parameters measured in the serum showed no relevant changes during the test period. Four parameters showed a marked influence due to Spirovital Therapy.

Table 2: Representation of the course of selected parameters

N = 10	Initial	2 weeks post	4 weeks
TAS	100 %	8 % increase	No other changes
Cholesterol	100 %	8 % reduction	Further reduction of 3 %
Triglyceride	100 %	25 % reduction	Further reduction of 4 %
Urate	100 %	6 % reduction	Further reduction of 7 %

Overall the number of subjects and the incomplete representation and evaluation of the above parameters is not sufficient to be able to make a reliable evaluation of the data.
Nevertheless, this study provides important information about the reduction of risk (lipid profile) and increase in anti-oxidative status.

In 2001 Dr. med. U. Krämer[8] reported an interesting patient observation when using Spirovital Therapy for **hypercholesterolaemia.** In a small group of n=3 female patients with verified hypercholesterolaemia he determined the initial fasting values for HDL and LDL. The patients then received a Spirovital treatment **2x weekly for 30 minutes each** over a total period of five weeks. A **reduction** in **total cholesterol of around 21 per cent, in LDL cholesterol by 24 per cent** and an increase in **HDL cho-**

lesterol by 40 per cent were observed in all three patients. Particularly noteworthy is the change in the **HDL/LDL quotients,** which were very significantly lowered by more than **50 per cent** in all three patients and were therefore in the normal range of risk of a cardiovascular event. Because of the small study population any discussion as to a possible underlying mechanism of the intra and inter-individual success of Spirovital Therapy can only be regarded as speculative at this point.

In the Erftstadt Medical Centre, Erpenbach et al.[4] presented a summary of their findings from a study of patients with chronic obstructive pulmonary disease and the influence of **a 4-week, 30-minute/day Airnergy inhalation.** In order to answer the question of whether Spirovital Therapy brings about significant changes (walking distance, climbing stairs, lung function test, serological investigation, blood pressure) in a patient population (n=15) suffering from COPD (no details of GOLD standard), the corresponding examinations were carried out on days 0-14-28 and 56. Over the course of the 4-week treatment **all** patients **improved** in their performance of the walking distance and **stair climbing**, and this effect was maintained over the following months, in which there was no treatment. An important parameter of lung function, the **FEV1/VC ratio, improved by 8.6 per cent** during the treatment phase but then reverted to the initial value in the post observation phase. The serological investigations showed a **reduction** of **CRP** by **83 per cent** but no other changes in the blood picture were observed. In all patients there was a **normalisation of blood pressure** during the treatment. Despite a seasonal wave of infections, none of the 15 patients experienced any exacerbation during the entire treatment phase or the subsequent 3-months observation phase[4].

5. Summary assessment

Starting from the smallest unit of the human body, via animal experiments on patho-physiological control mechanisms to the clinical complexes of symptoms and diseases of very different genesis and severity, Spirovital Therapy demonstrated an unreservedly positive effect.

In the foundation of cell physiology the use of Airnergy was able to demonstrate significant support in the prevention of pathological states in human neutrophile granulocytes and epithelial cells and, on the basis of the measured valid end points (increase in intra-cellular ATP and IL-8 formation, decrease in reactive oxygen species), it can be unreservedly recommended for physio-pathological regeneration and also for individual prophylaxis and prevention.
Furthermore, another study showed that a treatment with singlet oxygen energy can decrease the production of reactive types of oxygen by monocytes and thereby limit excessive tissue damage during reperfusion or inflammation. The contradiction that singlet oxygen, a highly reactive electrophile molecule, has an anti-oxidative effect could thereby be explained by the inactivation of NADPH-oxidase. The demonstration of a healing effect of singlet oxygen energy treatment at the cellular level could offer a wide field for application in all medical indications associated with oxidative stress.

The value of Wienecke's work can be seen when one looks at his results and their immense significance in the context of the neglected fields of prevention and prophylaxis. It would seem essential to extend the pilot study initiated and published by him in order to identify the physiological-biochemical mechanisms of Spirovital Therapy that show themselves to be so very significant, valid and reproducible in reducing the surrogate parameters of heart rate and blood lactate. The same applies to the data collection of Hottenrott et al., who, in his investigation, sees an acute vagal effect of Spirovital Therapy for the duration of the intervention using the surrogate parameter of heart rate variability. A strengthened vagal stimulus is relevant for health and leads to more economic heart action. The increase in variability of the heart beat sequence is regarded as being connected with greater stress tolerance and health stability. Complementary to Wienecke's data survey, the study results are to be seen in the context of prevention of phrophylaxis. Alongside the basic scientific investigation of the underlying mechanisms, once again validity, reproducibility and sustainability of the demonstrated data are of extreme importance for the future.

Björn Carlmark's report is a valuable piece of literature in the search for the pieces needed to complete the overall picture of the action of Spirovital Therapy. Wienecke has already described an ideal time for a spirovital treatment before performing endurance activity, so that these results demonstrate a reliable

period of at least 2 weeks 3x weekly Spirovital Therapy in order to be able to record measurable changes in the blood of healthy test subjects. Moreover, they represent a stable bridge to the results of the investigations carried out by Dr. Krämer on sick patients.
Particularly noteworthy are Dr. Krämer's data in the appendix as he was able to show a demonstrable improvement in cardiovascular risk factors (LDL, HDL, HDL/LDL). Even if the number of patients in the group was small, cardiovascular disease remains one of the main causes of mortality in our time. A well designed study in a larger patient population is required to take Spirovital Therapy out of the grey area of complementary medicine to be recognised as a proper therapeutic measure.

Longer-term effects on physical performance but only short-term improvement in vital lung parameters suggest a systemic effect of Spirovital Therapy that cannot be identified using the surrogate parameter of FEV1/LV. Unfortunately Erpenbach's study falls down on the details of the COPD stages of the patient population, the initial, intermediate and final results per patient. Thus, based on the indication of a positive effect of Spirovital Therapy in COPD patients, the group of authors proposes to carry out a placebo-controlled, randomised, double-blind, follow-up study (results not yet available)!
Although the range of diseases investigated, in which Spirovital Therapy has demonstrated success, appears to be exceptionally disparate, at the same time this indicates an infinite spectrum of potential applications for Spirovital Therapy.

The potential mechanisms outlined in this Compendium are available everywhere in the body and demonstrate a very complex and finely-tuned system, so that it is easy to imagine that even the smallest deviation of control systems can cause impairments to health, which may not be noticeable initially but manifest themselves over time.

Based on the studies on healthy test subjects, the two fundamental pillars of prophylaxis and prevention of a disruption to the internal control system by the use of Spirovital Therapy have already been manifestly documented. The use of Spirovital Therapy can affect the smallest changes in the internal metabolic processes in the initial stages and thus prevent any future exacerbation.

Spirovital Therapy also shows itself to be of benefit in cases of already manifest diseases such as COPD or hypercholesterolaemia. To what extent this benefit can bring about a permanent cure, act as a palliative or act as a complementary-medical treatment can only be demonstrated by further clinical investigations.

Airnergy's aim is to find and connect up the missing links in this causal chain with additional valid and reliable studies in order to build the above-mentioned bridges between the many, impressive, individual case studies, references and observations from therapists and users and to build on this with the aid of reliable measurement parameters, that fulfil current requirements for proving efficacity.

Airnergy - Energy from Inside - is not just a clever advertising slogan.

Rather Airnergy is a support that can give an individual who has fallen into imbalance the necessary stimulus to recover his/her body's own energies and to help the body to rediscover its own innate ability for self-healing.

As a critical conventional doctor and specialist for clinical pharmacology I also believe -
„He who heals is right".

6. Future projects

Since the current data display a great variation in the number of test subjects/patients studied, their health conditions and target parameters applied and evaluation of the same, it must be an aim of future projects to harmonise surrogate parameters (such as HRV), laboratory-parametric results and the underlying biochemical bases.

If indeed it is the journey that is important, then a good deal of ground has already been covered at Airnergy in gaining recognition for Spirovital Therapy. I consider that the following study initiatives are necessary as the next step forward and I have proposed them to the Airnergy company:

I. Pilot study: user survey of doctors who use Spirovital Therapy in their daily practice with the aim of identifying the three main indicators for use in practice and planning a further, standardised study on the basis of these data. With the participation of interested colleagues subjective observations, surrogate parameter measurements and laboratory-chemical measurements should be combined for the first time with a large study population to give an overall picture. The results of the pilot study are expected in the first half of 2012.

II. User survey: currently the Ethics' Committee of the Medical Chamber for North Rhine has given a conditionally positive vote for a planned user survey by Airnergy AG involving around 1600 private users. Subject to a positive vote, expected in the near future, this survey will begin in the first quarter of 2012 and be evaluated by the middle of the year. In addition to the three main indicators for self application of Spirovital Therapy, users will be asked about time-dependent positive, negative and neutral effects of use and the influence upon physical performance and quality of life. Currently the study protocol includes 21 questions for assessing the expected results for descriptive evaluation of the data. This should help to clarify which population benefits the most from Spirovital Therapy and how to allow the data from the study described under I. to be balanced. A possible equal distribution of the three main indicators for use of Spirovital Therapy and also a complete imbalance in the results will provide a lot of information about the width of the band of effects of Spirovital Therapy, since the requirements of the private users could be evaluated completely differently from those of a therapeutic application by a doctor. As explained in I. the results will be considered in the design of the study.

III. Under the leadership of the local distributor, a clinical, double-blind, placebo-controlled study design with 3 treatment groups is planned to take place in Teheran in collaboration with local blood banks and transfusion centres;

Group 1: Inhalation of placebo Airnergy approximately 1 hour before blood donation,
Group 2: Inhalation of verum Airnergy approximately 1 hour before blood donation,
Group 3: Inhalation of verum Airnergy during blood donation.

The target parameter is the quantity of 2,3 bisphosphoglycerate (2,3-BPG) in the blood conserves obtained (critical parameter, influencing the durability of blood conserves). Should it be possible to demonstrate that Spirovital Therapy causes an increase of 2,3-BPG in the treated blood conserves, this would mean extended durability of this valuable commodity.
Apart from the fact that this finding would represent a useful validation of the theory, it would constitute a milestone in transfusion medicine all over the world.

IV. Prof. Kobayashi of Yuntendo-University (Japan) is preparing a study into the **intra-cellular ATP increase** on application of Spirovital Therapy.

V. Spirovital Therapy with Airnergy® A medical and scientific Compendium: Annual update

VI. Spirovital Therapy with Airnergy® A naturopathic Compendium

VII. Spirovital Therapy with Airnergy® A Compendium of individual clinical case studies

VIII. Various compendia, classified according to diseases in a summary of testimonials from private users and therapists

7. References

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The complete folder of original works can be requested from Airnergy at any time.

8. List of abbreviations

Arranged in alphabetical order:

$^1O_2$	Singlet oxygen
2,3-DPG	2,3-diphosphoglycerate (old designation)
2,3-BPG	2,3-bisphosphoglycerate (new designation)
$^3O_2$	Triplet oxygen
ADP	Adenosine diphosphate
ALAT	Alanin-aminotransferase
ALP	Alkaline leucocyte phosphatase
ASAT	Aspartate-aminotransferase
ATP	Adenosine triphosphate
CcO	Cytochrome-c-oxidase
COPD	Chronic Obstructive Pulmonary Disease
CRP	C-reactive protein
$FADH_2$	Flavin-adenine-dinucleotide
FEV1/VC	Ratio of relative 1-second capacity (Tiffeneau Index)
$FMNH_2$	reduced form of flavin mononucleotide
GCP	Good Clinical Practice
GSH-Px	Gluthathione-peroxidase
H_2O	Water
Hb	Haemoglobin
HDL	High Density Lipoprotein
CSI	Cardio-Stress-Index
HF	High Frequency (parasympathetic)
HOCl	Perchloric acid
HR	Heart Rate
HRV	Heart Rate Variability
ICH	International Conference on Harmonisation
LDL	Low Density Lipoprotein
LF	Low Frequency (Sympathetic)
Mb	Myoglobin
MZ	Time of measurement
NADH	Nicotinamide adenine dinucleotide
NADPH	Nicotinamide adenine dinucleotide phosphate
NO	Nitrogen monoxide
O_2	Elementary oxygen
O_{2^-}	Hyperoxide anion
PCr	Phosphocreatine
PMA	Phorbol Myristate Acetate
pO_2	Partial oxygen pressure
ROS	Reactive Oxygen Radicals
RR	Blood pressure (measured using Riva-Rocci method)
SOD	Superoxide-Dismutase
TAS	Total Antioxidative Status

9. Closing statement

I, Dr. med. Susanne Klimpel, as a specialist for clinical pharmacology, am solely responsible for selecting, representing and evaluating the scientific data available to me. I selected the quoted studies after a comprehensive search of all available study material in which Airnergy was used. The material was classified according to its quality (including observation of GCP, ICH, statistical evaluation and credibility and thus according to reliability and validity) in accordance with a classification system I had previously established. This Compendium exclusively discusses scientific publications of the highest quality and thus ignores certain studies that I do not consider adequate for serious scientific assessment.

Regrettably this means that extremely interesting data surveys, carried out by committed and motivated colleagues and which are of great value in support of the scientific explanation of the Airnergy effects, have to be omitted. For example, we could not include data from studies of patients suffering from COPD, high blood pressure or sleep disorders. The same applies to a study from the years 1997-1999 carried out in the Ukraine that describes an outstanding effect of singlet oxygen energy therapy on just over 1,000 children from the region that was radioactively contaminated following the dreadful Chernobyl disaster.

Since I am aware that my decision in favour of the qualitative approach ignored valuable data, there is to be a further, medical summary of studies that also presents and discusses results of lesser scientific quality.

Since December 2010 I have been working freelance for Airnergy AG and for Airnergy International GmbH. I was not, and am not, influenced in my assessment of the data by any financial or other incentives.

On the basis of all the experience and knowledge gained so far it appears that Spirovital Therapy represents a complex treatment method that, in the context of influencing two basic metabolic processes - inactivation of NADPH-oxidase and increasing 2,3-bisphosphoglycerate, contributes to an increased oxygen supply in the mitochondria, via harmonisation of the basic regulation in the extra-cellular matrix, and there leads to improved O_2 utilisation and thereby activates the cell's own energy production (ATP) and to regulation of the cell metabolism in the organism as a whole. Both preventatively and curatively Spirovital Therapy activates and supports necessary bio-regulatory processes in the sense of a complete and universally-applicable measure. In therapy and rehabilitation in particular Spirovital Therapy

accompanies and supports clinical treatment approaches and conventional medical interventions.
We have forgotten not only how to live in nature but also how to live with it and from it.
This is not a departure from but rather a return to basic scientific philosophy.

Dr. med. Susanne Klimpel

Specialist in Clinical Pharmacology

„If someone wishes for good health,
one must first ask oneself whether he is ready to do
away with the reasons for his illness.
Only then is it possible to help him.“

(Hippokrates)

Many people have contributed to the creation of this compendium.

Dr. Klimpel wrote it, Prof. Jung, who, as an expert in energy metabolism, has headed up the scientific committee at Airnergy for five years now, inspired it.

The vision and direction of our research and development work is a tribute to his experience and his inquiring mind, which again and again defied accepted scientific convention.

We are grateful to you all.

At this point we would also like to thank those who have had and will have the trust to believe in what we all share, in the air and in our power to heal ourselves.

Let it serve as a reminder to those who use it in future that we create from the same source that created us and that can unite us, as a universally powerful therapy for everyman.

- Guido Bierther -
Founder of Airnergy

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He has the deed half done who has made a beginning.
Horaz

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