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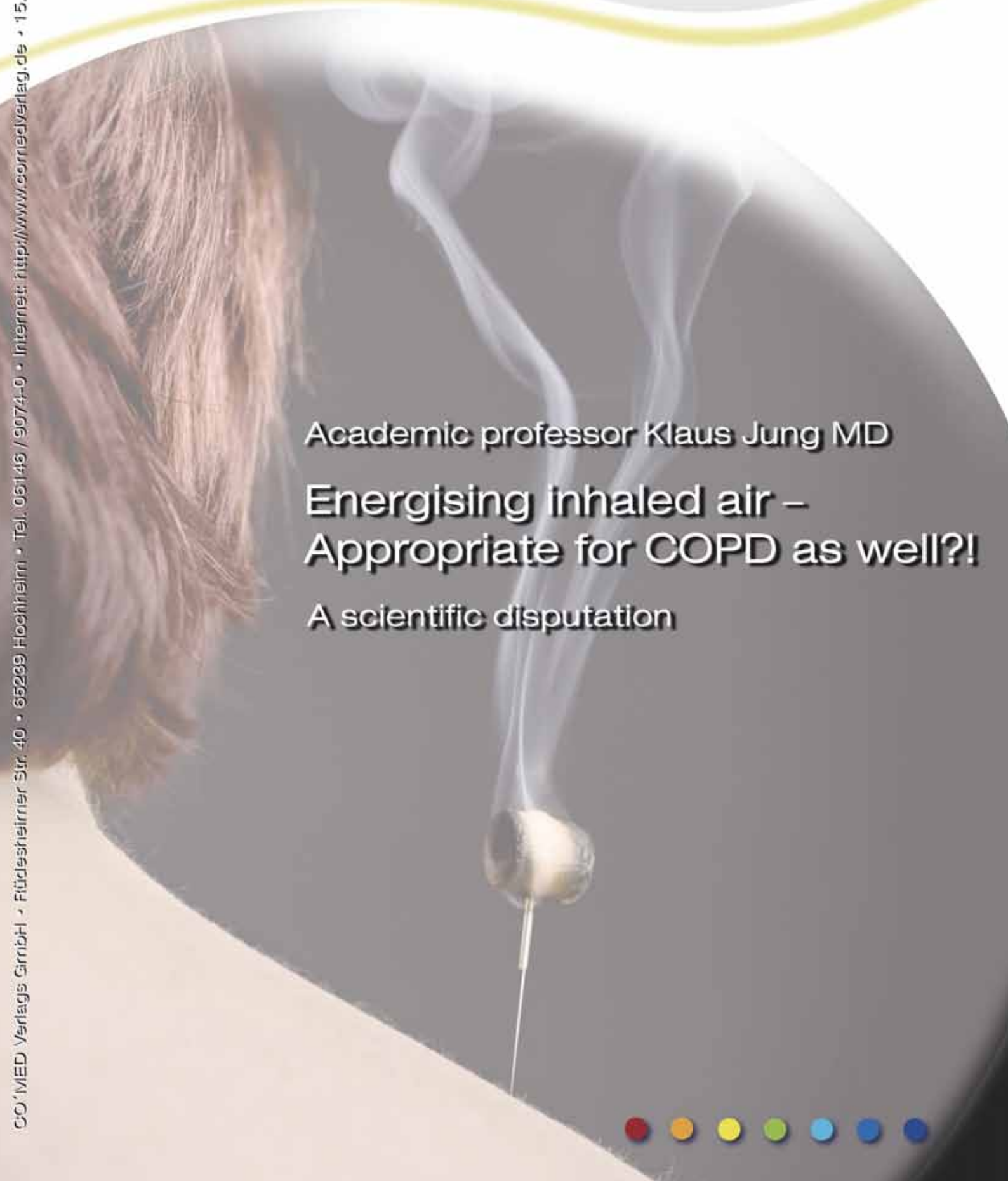

## Academic professor Klaus Jung MD

## Energising inhaled air – Appropriate for COPD as well?!

### A scientific disputation

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## A scientific disputation

**Introductory case study: G.S., aged 67, had suffered from pulmonary emphysema and COPD for 15 years, receiving on-going treatment from specialist (latterly formoterol to dilate the bronchi, budesonide to suppress inflammation, also, at own decision, silicea (D6) to expel mucus). Participated in a lung exercise group, instruction in breathing techniques. Ozone therapy at certain intervals. Severe gas exchange disorder, severe emphysematous expansion and severe peripheral obstructive ventilation disorder at resting values of $p_aO_2 \leq 60$ mmHg and $FEV_1 \leq 30$ %. After a few minutes' mildly intense exertion $p_aO_2$ dropped further to 42 mmHg, performance severely limited.**

*Activated air can be inhaled in many different settings.*

Verbatim account of own experience of inhaling activated air (here: Airnergy®) twice each day for 30 mins over a 24 day period: „…since starting using it I haven't needed ozone therapy any more….my $p_aO_2$ values are always over 70 mmHg, even when measured repeatedly, most recently 72 mmHg, my FEV1 is around 40 % …a week after I started using it I was able to stop taking silicea D6 to expel mucus….by using the activated air equipment each day my lungs are able to expel mucus in a way I wasn't able to before …white mucus loosens, as it were, the greenish-yellow stuff which is stuck in my lungs so that I'm able to cough it up, lots of it too….even when measured at night my oxygen saturation levels weren't low any more, the readings were always normal at around a constant 94%...also my concentration levels have improved noticeably as has my state of health, I have more energy….I don't have to stop every 20 paces when out walking…I can breathe much easier…after taking part in lung exercises I no longer feel totally exhausted, on the contrary I'd like to carry on…I'm eager to see what else will happen in the next few weeks…"

## Introduction

As an independent consultant to the manufacturing company my first urgent assignment was to gather together from the existing international literature the scientific principles behind the mode of action of inhaling activated air and to get clinical trials underway.

Following the existence of isolated case studies of a positive symptom-alleviating effect on COPD (chronic obstructive pulmonary disease) and pulmonary emphysema, it appeared worthwhile initiating an appropriate investigation with lung specialists and in hospitals/ rehabilitation facilities. This has not so far been possible. Requests/propositions in connection with this were rejected; inhaling activated air would not, it was argued, represent a serious option for treating this syndrome. Because, firstly, very few lung specialists have any experience of this new treatment method, and because, secondly, positive individual assessments and observations by affected patients and their therapists exist, at the very least clinical testing with an open outcome undertaken under serious scientific conditions should be accepted. The present article could contribute towards this end.

## List of other individual cases

1. COPD (chronic obstructive bronchitis with pulmonary emphysema), oxygen content approx. 50 %, long-term oxygen therapy declined so far due to relatively good subjective health, slight improvement following acupuncture, sceptical attitude towards inhaling activated air, began with 3 x 10 and then 3 x 15 mins 3 times / week, marked improvement in subjective health despite inclement weather, fairly minimal increase in oxygen content to 54 %, positive verdict overall

2. Clinical diagnosis: COPD with pulmonary emphysema exacerbated by infection, increased production of viscid mucus which was difficult to cough up, nightly coughing fits, following inhalation of activated air (21 mins daily) easier to cough up large quantities of more liquid mucus, breathed more freely

3. COPD with pulmonary emphysema, aged 71, significant deterioration in recent years, increasingly breathless of late, treated by specialist, severe set back following cold (damp cold weather), immediate improvement on inhaling activated air (no longer out of breath, able to go for walks and climb stairs once more)

4. COPD for about 12 years, side effects due to drug treatment (stomach, eyes), after inhaling activated air for the first time already marked subjective and objective improvement (state of health, activity level, less medication especially prednisone, no more exacerbations, no more colds, marked increase in oxygen saturation) (NL)

5. COPD as a result of smoking and occupational exposure to asbestos, aged 55, short of breath, lacking in energy, could only manage to walk 25 m, not capable of anything more, already marked improvement after just a few days inhaling activated air (more air, more energy), $pO_2$ rose from below 70 to over 90 mmHg, improvement in lung function, even one year later no relapse, marked

improvement overall (at work, on home exercise equipment, as regards physical and mental functional capacity) (NL)

6. COPD, aged 66, under specialist for last 5 years, no more colds since began inhaling activated air, more energy, better subjective state of health, oxygen content in blood increased, coughed less, able to walk more easily (NL)

7. COPD, aged 59, short-term deterioration in subjective state of health after inhaling activated air, then amazing improvement (could climb stairs without becoming short of breath, energy levels rose, slept better, no longer tired) (GB)

8. COPD, aged 78, heavy smoker all his life, 4 years previously serious deterioration in subjective and objective health (COPD) following pneumonia, prescribed inhaler, deteriorated further until totally immobile, after inhaling activated air $FEV_1$ increased continuously from 0.59 l to 0.80 l and FVC increased from 1.86 l to over 3.10 l (rose by 210 and 1150 ml). At the same time marked rise in subjective health and functional capacity (GB)

9. COPD, aged 65, constant mucous congestion, also osteoporosis, rheumatoid arthritis, osteoarthritis; able to walk about 200 m maximum, short of breath, no appetite; since inhaling activated air less need to use inhaler, peak flow (PEF) rose from 200 to 300 l/min, took part in regular lung exercises without any problems, more energy, more stamina, no longer short of breath, blood circulation improved, easier to cough up mucus which is more liquid, slept better, more self confidence, improved state of health (GB)

## Own survey of end users and therapists:

In 2007 the opinions of end users and therapists employing activated air inhalation over previous years were analysed scientifically, delivering revealing results overall.

42 records related to 163 disorders or cases of ill health (3.9 per record). 77 percent of the reported symptoms concerned functional, 23 percent organic factors. Success did not depend on age, subjects ranged from 21 to 91 years old. Subjects' condition sometimes deteriorated temporarily yet in each case a clear subjective, and generally also objective, improvement was observed at the latest after using this method for 7 days.

Analysis of end user data on the effectiveness of inhaling activated air on organic diseases revealed that the equipment was used successfully on disorders involving a wide variety of organ systems (nervous system, respiratory tract, cardiovascular system, immunodeficiency, pain, eye disease, musculoskeletal system, metabolic disorders, hormone system).

Specifically as regards the respiratory tract, bronchitis, COPD and pulmonary emphysema were mentioned in addition to bronchial asthma and sleep apnoea.

As for functional disorders, end users revealed that inhaling activated air had had a positive effect on their energy levels (performance, activity, resilience, strength, motivation), state of health (quality of sleep, mood, breathing, digestion, pain, immune state), regeneration (deepening, acceleration, relaxation, pulse calming) as well as in the sensory system (smell, sight, skin, giddiness). The individual aspects applied to all end users although the order of precedence varied according to each subject's condition at the outset.

There is no doubt that many of the positive changes mentioned also affect the syndrome „COPD with pulmonary emphysema".

As for the therapists' assessment, it was considered worthwhile employing activated air inhalation therapy with organic diseases as anti-ageing treatment, for pain, in dentistry, in oncology, with diseases of the respiratory tract, eyes, musculoskeletal system, cardiovascular system, immune system and with metabolic disorders as well as with inflammation and post-operatively.

Asthma and COPD were specific indications mentioned in connection with respiratory disease.

According to the therapists, inhaling activated air has a positive influence on a number of functional disorders such as decreased vitality, disturbed sleep, impaired immune system and poor vision, whereby some data can without doubt be related to COPD and chronic pulmonary emphysema.

## Brief description of the syndrome

This involves progressive damage to the respiratory tract and lungs which leads to increasing mucous congestion and shortness of breath. Two forms are possible in varying severity, firstly chronic bronchitis (accompanied by inflammation and constriction of the bronchi) and secondly emphysema (enlargement and damage of the alveoli). Chronic obstructive pulmonary disease is extremely widespread, principally affecting men over 40 who smoke and/or have been exposed to air pollution. Hereditary factors play a minor role. The symptoms may take years to develop (coughing up viscid mucus in the mornings, increased build-up of mucus, coughing, frequent infections of the respiratory tract with the production of greenish-yellow mucus,

*Energized water helps increase oxygen utilization.*

shortness of breath, wheezing inhalation). $FEV_1$ (< 70 %) and $p_aO_2$ (< 60 mmHg) are measured to quantify the extent of the damage. The general consensus is that damage which has occurred as a result of COPD with emphysema is largely irreversible, although the symptoms can be alleviated (inhaler, medication, long-term oxygen therapy, respiratory exercises, general strengthening, flu vaccination). Basically all forms of treatment focus on improving the oxygen supply to all the organ systems and improving the immune state (reducing mucus production, preventing infections, producing less viscid mucus).

Therapy based on inhaling activated air claims to achieve this.

## Previous user studies

### *Study with healthy subjects:*

1. „Some physiological effects of breathing singlet oxygen activated air. An experimental pilot study with ergospirometry", E. Rauhala and E. Sammaljärvi, (Finland), unpublished, 1995

   - **Test group:** 10 healthy subjects, aged 25-49, random selection
   - **Design:** 2 tests at 10 day intervals, ergospirometry beforehand/ afterwards, 20 mins daily inhalation of activated air
   - **Results:** Following the test increased $O_2$ absorption, reduced $O_2$ content in exhaled air; reduced $CO_2$ exhalation, lactate level unchanged, increased; energy consumption, increased carbohydrate metabolism with unchanged fat oxidation; increased heart rate

[1] Translator's note: oxygen content of inhaled air

[2] Translator's note: oxygen content of exhaled air

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is a medical doctor specialising in internal medicine, sports medicine and naturopathic treatment and was from 1982 until 2007 the leader of the sports medicine department of the "Johannes Gutenberg" University in Mainz. He is also a member of several scientific advisory councils and boards and sits on the executive board of the International Prevention Society. His main fields of work are: preventive and rehabilitation sports, endurance performance sports, sport nutrition, lactate metabolism and performance physiology. He has given more than 1,100 papers, written 108 books and book contributions and has more than 600 publications to his name, predominantly in the field of sports medicine and endurance sport, sport therapy and nutrition.

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- **Discussion:** After inhaling activated air despite increased performance (HF ↑, $V_iO_2$ ↑[1], $V_eO_2$ ↓[2], Kcal ↑); lower $CO_2$ production, no lactate increase; Metabolism economised; less subjectively perceived exertion

2. „Report on a two-part controlled study using heart rate variability readings (HRV) on the effectiveness of Airnergy+ oxygen therapy", U. Knop, CO'MED 12/03, p. 71-75

   - **Test group:** n = 15 (7 w, 8 m), aged 15-45, representative of normal population
   - **Design:** 10 mins HRV online measurement at rest, parallel ECG, $s_pO_2$[3], BP, HR; 20 mins respiration; 10 mins HRV online measurement, parallel ECG, $s_pO_2$, BP, HR
   - **Results:** HRV improved by 24 % (statistically highly significant); basal metabolism fell by > 40% (statistically highly significant); rise in $s_pO_2$ by approx. 2 % (at initial position of 97-99 %)
   - **Discussion:** Energy balance improved objectively, vegetative regulatory capacity optimised

3. „Concentrated oxygen and activated inhaled air: comparison between physiological effects of two inhalation methods. A study conducted on healthy subjects", U. Knop (study leader), C. Schöllmann (author), Ärztezeitschrift für Naturheilverfahren 45, 11 (2004)

   - **Test group:** n = 19 (10 m, 9 w), aged 17-59, 6 smokers, 13 non-smokers, healthy, normal weight
   - **Design:** a) 20 mins $O_2$ inhalation (95 % $O_2$, flow 4.5 l/min), b) 20 mins inhaling activated air recording RR, BP, HR, $V_eO_2$, peak flow beforehand/ afterwards
   - **Results:** $V_eO_2$ -9.9 % (b) (highly significant) and +2.6 % (a) (minimal significance) peak flow +7.1 % (b) (highly significant) and -3.4 % (a) (minimal significance); RR -12.9 % (b) (highly significant) and -4.4 % (a) (n.s.); HR -6.5 % (b) (highly significant) and -3.6 % (a) (n.s.); BP (b and a) (n.s.)
   - **Discussion:** Significant improvement in $O_2$ utilisation by all test subjects (activated inhaled air); improved metabolic economy (activated inhaled air) (peak flow ↓, AF ↓, HF ↓); stimulated regulatory processes (activated inhaled air); significantly better effect from inhaling activated air as against inhaling $O_2$

### *Studies with patients*

1. „Airnergy report", N. Eccles (Chiron Clinic, Harley St., London), unpublished, May 2004

   - **Test group:** n = 6 (5 w, 1 m), aged 27-59, volunteers, 2 x asthma
   - **Design:** Activated air inhaled for 20 mins per day for 4 days, HRV, LuFu (peak flow, $FEV_1$, FVC), blood morphology (RBC, WBC) analysed beforehand/afterwards
   - **Results:** Capacity of autonomic nervous system improved; peak flow rose by 20 % or 26 % (asthmatics); no change in $FEV_1$ or FVC (asthmatics); subjective state of health improved, less reliance on inhaler; erythrocyte aggregation reduced; increased white blood count activity
   - **Discussion:** Marked reduction in airway resistance; increased immunocompetence

2. „Airnergy application with chronic obstructive pulmonary disease", K. Erpenbach, Paper presented at Baden-Baden Medical Week, 2005

   - **Test group:** n = 13 (4 w, 9 m), aged 53-91, duration of COPD 2-52 years (ā = 8 years), 7 x stage 1, 4 x stage 2, 4 x stage 3, treatment: Beta2-sympathomimetics, cortisone, N-acetylcysteine, theophylline
   - **Design:** Activated air inhaled for 30 mins per day for 4 weeks; walking range, LuFu ($FEV_1$, FVC, $FEV_1$%), blood morphology (ers, leukocytes, PCV, Hb, thrombocytes, BSR, CRP), BP analysed beforehand/afterwards
   - **Results:** Walking range increased from 50 to 1755 m; FVC fell from 85 % (beforehand) to 68 % (afterwards) of target; $FEV_1$% rose from 58 % (beforehand) to 63 % (afterwards) of target; inflammatory activity fell (CRP fell from 35.9 mg/dl beforehand to; 4.7 mg/dl afterwards, BSR from 34 mm ESR beforehand to 8 mm ESR afterwards); bacterial exacerbation reduced
   - **Discussion:** Physical resilience improved; lungs less distended; immunocompetence increased

## Effect of inhaling energised air on COPD and pulmonary emphysema

The body's cells all rely on a constant supply of oxygen. The following factors all play a major part in this process: oxygen content of inhaled air, functional efficiency of the respiratory tract, capacity for diffusing oxygen from the alveoli into the vascular system, transportation via an intact vascular system and an adequate number of fully functioning erythrocytes, orderly transfer of oxygen from the capillaries into the tissue, permeable interstice, unimpaired absorption into the individual cells, onward transportation into an adequate number of fully functioning mitochondria as well as optimum enzyme capacity for aerobic metabolism.

Disruption is possible in many places. In the case of pulmonary emphysema the problem lies mainly in the inadequate capacity for diffusing oxygen from the alveoli into the vascular system. In chronic bronchitis this is compounded by inflammation and constriction and even obstruction of the bronchioles and bronchi. The complete picture of COPD is characterised by the additional production and inability to or difficulty in coughing up viscid mucus and increasing shortness of breath (oxygen deficiency).

So there is not a shortage of oxygen in the inhaled air, rather the oxygen is not reaching its target (mitochondria).

Inhaling energised air reduces this deficit and removes the problem at least to a certain extent. By briefly activating the inhaled air before it enters the respiratory tract, the molecular oxygen in the ambient air, which is actually inert, is activated (by the production of singlet oxygen, a stimulated but non-radicalised form). This active state lasts only fractions of a second. The activated

[3] Translator's note: oxygen saturation when inhaling/exhaling

oxygen reverts to its original (normal) state even before the air is inhaled. As a result, the energy previously absorbed is released again and given off to the surrounding water through which the inhaled air is directed. Inhaling atmospheric oxygen also supplies the respiratory tract with energised water due to the inhaled air being saturated with water vapour and this leads to the desired improved oxygen utilisation.

This transfer of energy through water vapour leads firstly to an increase in the erythrocytes of 2,3–diphosphoglycerate (2,3-DPG), an important catalyst of the intermolecular phosphate group make-up in the conversion of 3-PG into 2-PG, an important step in anaerobic alactacid energy production by the erythrocytes. The concentration of 2,3-DPG is generally low. Inhaling energised air can be seen to increase it significantly. As a result 3-PG can be transformed more quickly into 2-PG, in turn accelerating the transition from 1,3-DPG into 3-PG while, at the same time, increasing production of ATP with the result that the oxygen binding curve is shifted to the right. This increases the $pO_2$, at the same $O_2$ saturation or, at lower $O_2$ saturation, the $pO_2$ remains constant. This means that increased oxygen is given off into the atmosphere, equivalent to a possible improvement in the utilisation of oxygen, which also manifests itself in a rise in $AVDO_2$. This mechanism appears to explain the observation that, despite minimal diffusion of oxygen from the alveoli into the vascular system, an adequate oxygen supply can delivered to the individual organ systems by inhaling energised air.

A second important effect of inhaling energised air is the increase in immunocompetence. This is caused, firstly, by increased activity of the white blood count, reduced tendency to inflammation and decrease in oxidative stress. Secondly, inhaling energised air (singlet oxygen) has been shown to lead to quenching of reactive oxygen species (ROS) and to a reduction in $O_2$ radical production. Irreversible damage to amino acids in the human body caused by atmospheric nitrate radicals is regarded by experts as the potential cause of respiratory disease.

Further attempts at explanation could be added to the above accounts but will be deliberately withheld as, so far, these are largely theoretical arguments which require experimental validation by means of clinical trials.

## Conclusion

Respiratory diseases, especially bronchitis, pulmonary emphysema and COPD, are some of the most common disorders of all. Genetic predisposition plays a minor part; smoking and exposure to environmental toxins are the principal factors behind their development. These conditions cannot be cured (?), however the symptoms can possibly be alleviated. The main symptoms are increasing shortage of breath and increasing production of viscid mucus which is very difficult to cough up. Energised air inhalation can apparently be employed, in addition to other therapeutic measures, to successfully treat both symptoms, firstly by improving utilisation of the (inadequate amount of) oxygen reaching the cells and secondly by aiding immunocompetence (quenching $O_2$ radicals, preventing colds and suppressing inflammation). This is demonstrated by numerous individual accounts from those affected as well as their therapists. A few user studies confirm this experience, however so far no large-scale evidence-based studies have been conducted. It is difficult to understand why the majority of lung specialists and relevant scientific institutions so vehemently resist collaborating in further studies with an initially open outcome. The hope is that the present article will help change this dismissive attitude.