

Rubrik Bioresonanzmethode (englisch)

Bioresonance Therapy – a complementary medical method

History

The bioresonance method was developed in the 70s of the twentieth century by natural medicine oriented physician Franz Morell and electronics engineer Erich Rasche out of the medication test of electroacupuncture in accordance with Voll.

Using a sender for electromagnetic vibrations which was in electrically conducting contact with homeopathic medications and a receiver system which was connected to the electroacupuncture measuring circuit, Morell and Rasche (MORA) obtained the same electrical skin conduction parameter changes on acupuncture points as if the original medications were present in the measuring circuit. They thereupon postulated that medicament information is marked by weak low-frequency electromagnetic vibrations in the range of 1 Hz to 10^6 Hz and that consequently – due to the physiological effects (resonances) on the acupuncture points - such weak electromagnetic vibrations are part of the information transmission system in human beings. [39-41]

Therefore, based on the mode of the tests and on the determined biological effects on the wholeness of human beings, weak, coherent electromagnetic vibrations are postulated as information carriers. However, they are not explicitly measurable. When there is contact between a person and the unit, an electromagnetic white noise which is clearly above the electronic white noise of the unit is measured. This active electromagnetic white noise of human beings seems to provide the basis for the transmission of information in an as yet unknown manner. In order to obtain a first theoretical understanding of this phenomenology, Galle [23, 24] applied explanatory concepts of biophoton theory to the low frequency electromagnetic vibrations which are relevant in bioresonance therapy.

The therapeutic utilization of this knowledge led to the development of MORA bioresonance therapy. In this method, the postulated electromagnetic vibrations are obtained via flat electrodes from specific skin regions of humans. After optical uncoupling, they are inverted in a phase constant manner in the unit (mirrored) and returned to the person as therapeutic input. This can be selectively applied either throughout the entire frequency passage range (1 Hz – 20 0000 Hz) or with highly specific frequency passage range. [23, 28, 41]

The methodological approach of Morell and Rasche was typical for experience healing. This method was developed by means of input-output research on the wholeness (black box) of human beings. Thus far, only relatively hypothetical explanatory models exist with regard to the physical and physiological interactions. In order to test the reproducible effect of a healing method, one does not, however, require reductionistic-materialistic explanatory concepts. Theoretical explanation is a claim, but not a necessary criterion of natural science.

It is of historic interest that at the same time, Fritz-Albert Popp and Bernd Ruth discovered biophotons [10, 45, 48]. These are weak coherent electromagnetic vibrations in the 10^{14} Hz

range which are emitted by living systems and to which, according to the theories of Popp and his co-researchers, fundamental regulatory functions within living systems are ascribed.

MORA bioresonance therapy has been successfully applied by natural healing oriented practitioners worldwide for 30 years. There are numerous positive documentations of individual cases regarding a variety of indications, including—among others - allergies and intolerances, functional disorders, psychosomatic illnesses and the rheumatic forms (e.g. 27, 41]. Scientists have given more attention to Morell's theses and practices particularly in the last 10 years. Several work groups carried out clinical human studies as well as plant and animal studies to verify the bioresonance method (see below).

The BICOM unit, the IMEDIS unit and many other bioresonance units which work according to this method are built in the manner of the MORA III unit which was developed by Morell and Rasche.

Basic principles and methodology

The MORA bioresonance unit enables endogenic and exogenic bioresonance therapy as well as diagnosis.

In the fundamental therapeutic principle of *endogenic bioresonance therapy*, the patient is connected to the bioresonance unit via flat hand and foot electrodes.

Through these flat electrodes, the postulated weak electronic vibrations of the body are transferred into the unit, mirrored (electronic phase-constant inversion, Ai mode) and depending on the therapy adjustment, either the entire frequency range or partial frequency ranges are transferred back to the person and overlaid with the body's own vibrations. Various special therapy strategies, such as with "harmonic" and "disharmonic" vibrations or local electrodes directly at the site of the illness, complement the basic therapeutic principle. The physiological effects can be measured relatively quickly with electroacupuncture at the acupuncture points.

As a fundamental principle of bioresonance therapy at a physical level, we believe that there may be destructive interference ("erasing" overlaying) of "rigid", isolated vibrations ("pathological vibrations") with themselves. In this manner, with the participation of self-regulation processes, they seem to become reintegrated into the flexible dynamic vibrations of human beings. Physiological blockades which are correlated with the "riding" vibrations subsequently dissolve [23]. The "pathological vibrations" are, according to these hypotheses, the correlate of the illness on an electromagnetic level.

How can such a weak electromagnetic interaction as it is postulated here have any physiological effect? Galle [23] describes the effect of such weak fields, based on the biological phenomenology thus far and the works of Nobel Prize winner I. Prigogine [46, 47] and representatives of the Deterministic Chaos Theory (such as 16] as an *informative catalyst effect*.

Informative catalyst = because such weak interactions may trigger only potentially existing physiological and/or biochemical regulation programs which are already present in an inactive initial situation (imbalances, sensitive points, floating points). The energy which is required to execute the program must be provided by the living system itself. It is not linked to the energy content of the transmitted information.

Bioresonance therapy supports “only” the individual self-healing potentials. It supports individual development options without exposing them to external effects as many highly active drugs do (such as corticosteroids). Side effects in “school medical” therapeutic agents are only the consequence of such an artificial external, in this case biochemical, “straitjacket”. When using the bioresonance method, there are therefore also no reports of occurring side effects.

In *exogenic bioresonance therapy*, the postulated weak electromagnetic vibrations are overlaid from outside on the body’s own field of vibrations, and therapeutically and diagnostically utilized.

These external vibrations are generated by:

- diagnostically and therapeutically relevant substances (such as allergens, vitamins, nosodes, heavy metals). These substance vibrations can be electronically stored and are available in a digital form as so-called “electronic homeopathy”.
- Body secretions, body excretions and body fluids (such as blood or pus).

As the fundamental physical acting principle of exogenic bioresonance therapy, we postulate, according to the suggestion of J. Strube that substances in the earth’s magnetic field, activated by the electromagnetic environmental white noise, send out substance-specific electromagnetic vibrations, such as immediate core spin resonances and spin-spin couplings. This leads to the generation of a very low-energy electromagnetic vibration image (EMSA) in the external space of the substances, below the thermal white noise limits. In the core spin tomography device, this physical mechanism is utilized in strong magnet fields.

This EMSA is the substance-specific information carrier which connects with the body’s own vibrations. The high sensitivity of living systems and thereby also human beings makes such an information transfer possible. [23]

As a fundamental physiological acting principle of these weak electromagnetic interactions, we also postulate, in this case, the above described *informative catalyst effect*. An analogy of this acting principle could be found in the following image of J. Strube: A locomotive moves onto a switch. The switch setting decides whether the train goes to Hamburg, Berlin or Milan. The informative catalyst is analogous to the switch setting, which decides into which direction the train will move under its own power, analogously to the physiological program. [23]

At the present time, there are only hypothetical explanatory models in existence concerning the physical – physiological acting mechanism of bioresonance therapy. However, they are highly plausible and have also proven themselves well in terms of phenomenology.

Lack of a scientific ability to provide explanations cannot, however, serve as a prerequisite for the recognition and application of a healing method, for this also applies to generally recognized and applied natural healing methods such as acupuncture and homeopathy. Furthermore, even “school medicine” already utilizes numerous therapies and measures whose acting mechanisms are not scientifically understood, or are only scientifically understood decades later (such as the effect of acetylsalicylic acid in aspirin).

Empirically proven, practical and therapeutic effectiveness is the decisive factor in the healing sciences - not a scientific ability to explain. As already stated, theoretical explanation is a claim, but not a necessary criterion of natural science.

According to the knowledge of practical – natural scientific healing physicians which was obtained from experience [e.g. 28, 41], the best therapeutic successes show themselves in:

- allergies and intolerances
- functional / psychosomatic illnesses
- metabolic disorders
- acute and chronic pain
- rheumatic forms
- follow-up treatment after surgery
- chronic latent intoxication (e.g. in the presence of excessive amalgam)

According to the therapeutic experience of practitioners and also with regard to the postulated acting principles, one can try to positively influence any condition of illness.

Human studies

At the present time, there are, to my knowledge, the further mentioned controlled clinical human studies about bioresonance therapy.

The study by Chervinskaya et al. [11, 12] about respiratory and allergic illnesses confirms the positive results of Schumacher [52] and Hennecke [26], whose tests were, however, carried out without controls.

The study by Kofler et al. [33] shows contradictory results. According to the subjective statements by the participants, bioresonance therapy does work in pollinosis, according to the objective measurement data it does not work.. For the resolution of this contradiction, we refer to Galle [23]. In the study by Schöni et al. [51] with neurodermitis children, the positive effect of bioresonance therapy by comparison to the placebo group is two to three times as large in two out of the three target figures, however it is barely not significant. Schöni et al. therefore believe that bioresonance therapy is not effective. The scatter rates of the measurement data are enormously large. We believe that the statistical evaluation may have been inadequate. Lüdtkke [36] also believes that the conclusion of Schöni et al. is not admissible.

Newly Cheng et al. [63, 64] gave evidence for the clinical efficacy of the bioresonance therapy and the therapy with electronic homoeopathic remedies on allergic symptoms in two uncontrolled studies. The last mentioned study confirms the study of Schuller and Galle [60] with regard to the clinical efficacy of electronic stored bioactive substances.

In 2004 and 2005 Chinese physicians published a lot of studies about allergic diseases done with the bioresonance method. They were carried out at hospitals and universities. The controlled trials against comparative groups of Huang et al. [66] and Yang and Zhang [67] with children give great evidence for the efficacy of the bioresonance method in allergic rhinitis and bronchial asthma. In non-controlled studies Xu et al. [68], Feng et al. [70], Zhang et al. [69] and Du et al. [71] demonstrate significant effectiveness in urticaria, bronchial asthma, rhinitis and skin eczema. These studies confirm the positive studies done by European physicians and scientists with regard to allergic diseases.

Two studies show the clinical effectiveness in the rheumatic group of forms [25, 38]. Two further studies in patients with rheumatoid arthritis document that reduced cellular stress protein content and reduced anti-oxidative protective enzyme content is normalized by bioresonance therapy [31, 32].

Nienhaus and Galle [42] showed that functional gastrointestinal complaints were clearly improved by bioresonance therapy as compared to placebo therapy.

In children and youth, Saweljew et al. documented [49] the positive effect in bronchial asthma. Trifomov et al. [58] also prove the clinical effectiveness of bioresonance therapy in obstructive respiratory disorders.

In slight chronic liver disorders, Machowinski and Kreisl [37] documented the successful application of bioresonance therapy.

Papcz and Barpvc [43] believe that bioresonance therapy is effective in overload syndrome of performance athletes.

The comparative study of Wille [59] with stuttering children remained without a clear statement by the author.

In a recent carry out study (2007) of Schuller and Galle [60]) the clinical effect of electronically stored nosods was tested on patients with rheumatic deceases in the frame of the exogenous bioresonance therapy. The results were positive. It was worldwide the first study in which electronic stored bioactive-substances were tested exclusively in a trial with human beings. Korenbaum et al. 2006 [62] gave evidence in a double blind trial for a significant difference between the absorption spectra of electronic copies of homoeopathic nosods and placebos in the range of 700 to 800 nm. The production of the electronic copies is essentially equal to the electronic storage of bioactive substances on water-alcohol-mixture done by the bioresonance method.

The study from Uellendahl in 2008 [61] gives evidence for the efficacy of the MORA-Color-Therapy in patients with functional pain in the system of movement. The MORA-Color-Therapy is a combination of endogenous bioresonance therapy and electronic color therapy.

A retrolectiv, longitudinal cohort study with the bioresonance method (561 case reports) was published 2008 by Rahlfs and Rozehnal [72]. In order to investigate the clinical effectiveness, they assessed the experiences of physicians and nonmedical practitioners made with the bioresonance therapy in 14 fields of indications. The therapists described on a standardised case report form cases that had been treated with bioresonance. The effectiveness of bioresonance therapy was judged to be satisfactory to very good in 92.4% of the cases.

In no study side effects were reported.

These studies were carried out in physician's practices, clinics and university clinics. Ten studies confirmed the knowledge which the practitioners obtained from experience. Based on his results, one author does not dare to make a clear assessment, and two studies term bioresonance therapy ineffective, even though their results, in our view [23] as well as that of Lüdtke [36], do not permit such a conclusion.

Conclusion: The greater majority of the executing scientists and physicians, on the basis of their investigations, believe that bioresonance therapy is clinically effective.

Animal and plant studies

In the past 15 years, various universities and state or state supported institutions carried out a series of controlled animal and plant tests in order to test the biological effectiveness of the endogenic and exogenic bioresonance method [1-9, 13-15, 17-22, 30, 34-35, 44, 53-57, 65]. These tests confirm the biological effectiveness of the central elements of the bioresonance method. Among other things, the bioresonance method had a significant influence on the development of tadpoles, heart activity in guinea pigs, the defense system of mice which had been subjected to radioactive radiation, and the regress of implanted malignomas in rats. Some studies were repeated by several work groups because the results seemed so unbelievable (also see the monograph of physicist and scientific historian Michel Schiff [50]). The research into the possible biological effects of non-substantial low energetic bioinformation is only at its beginnings.

Naturally, such animal and plant studies do not prove clinical effectiveness in humans, but it does seem highly likely that an information transmission system which functions in animals as well as plants will also be of significance to human beings. Particularly since it was discovered in humans.

Recognition by the Hufeland Association for General medicine – Association of the Physicians' Associations for Biological Medicine

MORA bioresonance therapy has been recognized by the Hufeland Association for General Medicine [29] and is therefore to be described as a generally recognized natural healing method or a generally recognized method in biological medicine.

The Hufeland Association consists of 25 physicians' associations and approximately 20 000 physicians, who also practice natural healing methods or biological medicine. The significance of the Hufeland Association can, among other things, be recognized from the fact that the listing of this association is utilized for the purposes of refunds or recognition of alternative healing methods by numerous insurance companies.

However, the wide spread of bioresonance therapy not only in Germany, but worldwide also speaks for its effectiveness and the resulting recognition. Bioresonance therapy is recognized not only by numerous physicians, but also in the consciousness of the population. In Russia, it is recognized by the state health insurance.

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69. Zhang X, Wang W, Liu Q: Klinische Beobachtung über 54 Behandlungsfälle gegen Nesselausschlag mittels BICOM Bioresonanztherapiegerät. *China Journal of Leprosy and Skin Diseases* 2005; 21(8):651. (The German translation from the Chinese language can be obtained from the author.)
70. Feng Y, Chen H, Li R, Liu C: Die neulich klinische Beobachtung der Heilwirkung mit Bioresonanztherapiegerät in 150 Fällen der Kinder-Allergiekrankeheit. *Chinese Journal of Contemporary Pediatrics* 2005; 7(3):257-258. (The German translation from the Chinese language can be obtained from the author.)
71. Du X, Liu Y, Yang J: Klinische Beobachtung über 79 Behandlungsfälle gegen allergische Hautkrankheiten mittels Bioresonanzgerät. *Chinese Journal of Practice Medicine* 2005; 4(5):259. (The German translation from the Chinese language can be obtained from the author.)
72. Rahlfs VW, Rozehnal A: Wirksamkeit und Verträglichkeit der Bioresonanzbehandlung. *Erfahrungsheilkunde* 2008; 57(8):462-468.

Human clinical studies with bioresonance devices

The last few years, in particular, have seen the conducting of a number of controlled human studies of bioresonance therapy that have demonstrated the effectiveness of the method even using this empirical form of testing. The Appendix presents an overview of the studies of which I am aware by indication, author, title, journal and design (study type).

The majority of these studies are discussed below with reference to their results. It is not possible, or indeed intended, for this brief discussion to provide a comprehensive evaluation of the studies. For this, I recommend a detailed examination of the relevant publications.

In 1990 and 1991, Schumacher (1998) conducted two prospective, uncontrolled studies of allergies and intolerance as indications. The 1990 study, in particular, examined the effect of bioresonance therapy on allergic skin conditions (e.g. neurodermatitis) and allergen-inhalation conditions (e.g. bronchial asthma) during the allergen-free period. Hay fever patients were excluded. According to Schumacher, 83% of patients were able to tolerate the allergen without reacting, 5 months after the end of the course of treatments and in 11% of patients there had been a marked improvement in the allergy. The study participants were principally children and adolescents.

The 1991 study examined the effects of bioresonance therapy exclusively in hay fever patients (principally children). The treatments were carried out during the allergen-free period. According to Schumacher, after the first pollen season following bioresonance therapy, 43.4% of patients were no longer experiencing any symptoms of hay fever, 15.9% had only mild residual symptoms on isolated days and 34.5% had observed an improvement but were still experiencing some marked residual symptoms. According to Schumacher, permanent success of the therapy is possible only if each bioresonance treatment is restricted to a single allergen. Neither study reported any side effects or complications of the bioresonance therapy.

Schumacher's studies confirmed the positive individual case reports obtained in allergy patients by Morell and many others, but attracted vehement criticism from Austrian doctors because the results were unbelievably positive and the studies were not conducted with a comparable control group. They did not meet the requirements of "evidence-based medicine".

The Austrian doctors then conducted two controlled studies (Kofler et al. 1996, Schöni et al. 1997) to verify Schumacher's results.

The study by Kofler et al. with hay fever patients produced contradictory results. According to the subjective statements of the patients, the participants experienced a 52.3% improvement in well-being. These results therefore concord largely with those of Schumacher. However, as far as objective data are concerned, e.g. nasal challenge, bioresonance therapy produced no improvement according to Kofler et al. For an explanation of this contradiction, reference should be made to Galle (2002). According to this author, the methodology used in the Kofler study, including the use of the classic allergy concept as a measure of the bioresonance allergy concept, does not make sense. Kofler et al. did not report any side effects.

Schöni et al. documented a two to three times greater mean improvement in children with neurodermatitis in the bioresonance therapy group compared with the control group in relation to the three most important end-points (total Costa score and pruritus score). Therefore, a clear mean improvement was achieved with the bioresonance therapy in comparison to the placebo group. However, according to Schöni et al., these differences are not significant at the 5% probability of error level. In my opinion, Schöni et al. are obscuring the effectiveness of the bioresonance method through inappropriate statistical analysis. To take one example, if the before and after mean values for the total Costa score are checked for

significant differences using a t-test, the change produced by the bioresonance therapy is significant, whereas the change produced by the placebo treatment is not.

The two studies by Kofler et al. and Schöni et al. appear, on the basis of the methodology and the statistical analysis method used, to be designed to make the bioresonance method look ineffective. In neither study were any side effects reported.

However, Schumacher's positive results were endorsed by Chervinskaya et al. (1997), who conducted an extensive controlled study of the effect of the bioresonance method on allergies and respiratory diseases. Through a complex assessment of effectiveness before and after the bioresonance therapy, involving a whole series of subjective and objective assessments, they concluded that the degree of effectiveness of the bioresonance therapy is very good in 25% of patients, good in 42%, and satisfactory in 21%. This result is much better than the result obtained in the control group. These authors, too, reported no side effects of the bioresonance therapy.

Newly Cheng et al. (2008 and 2008) gave further evidence for the clinical efficacy of the bioresonance therapy and the therapy with electronic homoeopathic remedies on allergic symptoms in two uncontrolled studies. The last mentioned study confirms the study of Schuller and Galle (2007) with regard to the clinical efficacy of electronic stored bioactive substances.

In 2004 and 2005 Chinese physicians published a lot of studies about allergic diseases done with the bioresonance method. They were carried out at hospitals and universities. The controlled trials against comparative groups of Huang et al. (2005) and Yang and Zhang (2004) with children give great evidence for the efficacy of the bioresonance method in allergic rhinitis and bronchial asthma. In non-controlled studies Xu et al. (2005), Feng et al. (2005), Zhang et al. (2005) und Du et al. (2005) demonstrate significant effectiveness in urticaria, bronchial asthma, rhinitis and skin eczema. These studies confirm the positive studies done by European physicians and scientists with regard to allergic diseases.

A number of Russian studies examined the effect of the bioresonance method in rheumatic conditions.

Maiko and Gogoleva (2000) conducted a controlled study of the effectiveness of bioresonance therapy in arthrosis (mainly osteoarthritis of the knee). According to their clinical assessment (complex parameter calculated from joint pain, joint function, blood analysis, well-being and fitness to work), the bioresonance treatment produced a clear and significant improvement from 57.5% to 94.0% in the test subjects, compared with purely conventional treatment. In relation to arthrosonography, bioresonance treatment brought about a marked and significant improvement in therapeutic success (reduction in synovitis and tendinitis) from 32.5% to 75.0% in the test subjects, compared with purely conventional treatment. The therapeutic effect in the group that received the bioresonance treatment was much longer and more persistent. According to the authors, bioresonance therapy is well-tolerated and has no side effects.

Gogoleva (2001) studied bioresonance therapy in fibromyalgia patients. They compared a group receiving manual therapy with a group receiving manual therapy and bioresonance therapy. In both groups, there was a clear and significant therapeutic effect, but in the bioresonance group the therapeutic effect was more frequent, significantly earlier, more marked and longer-lasting in respect of all the parameters recorded. The muscle syndrome index (complex parameter of muscle pain) improved by 37% in the control group and by 72.4% in the bioresonance group. There was also a marked and significant improvement in

concurrent symptoms of fibromyalgia, e.g. disturbed sleep pattern and sensitivity to the weather, compared with the control group.

Two controlled Russian studies (Islamov et al. 1998 and 2002) documented changes in cellular biochemistry as a result of bioresonance therapy in patients with rheumatoid arthritis. Heat shock protein (stress protein) synthesis is reduced in rheumatoid arthritis patients. Similar reduction in protein synthesis are typical of all lymphocyte proteins. This indicates that reduced heat shock protein synthesis in the presence of rheumatoid arthritis is non-specific and reflects a general dysfunction of the immuno-competent cells, accompanied by disturbances in non-specific protective mechanisms against harmful factors, e.g. hypoxia and immune complexes. Bioresonance therapy normalises the 60% reduction in heat shock protein synthesis in lymphocytes in rheumatoid arthritis patients. Islamov et al. 1998 surmise that the therapeutic effect of bioresonance therapy in rheumatoid arthritis is achieved by the restoration of functional lymphocyte activity in relation to the normalisation of heat shock protein synthesis.

In 2002, Islamov et al. measured superoxide dismutase, catalase, and glutathione-peroxidase activity, as well as the level of non-protein-containing thiol groups (reduced glutathione) in the circulating lymphocytes of rheumatoid arthritis patients before and after bioresonance therapy. The state of the antioxidant system in the lymphocytes of patients receiving normal pharmacological treatment (diclofenac, prednisolone, etc.) was characterised by activation of antioxidant key enzymes and a reduced thiol group level. Bioresonance therapy increased the reduced glutathione level and normalised superoxide dismutase and glutathione peroxidase activity. Catalase activity remained unchanged. These changes in the antioxidant system of lymphocytes indicate that bioresonance therapy activates non-specific biochemical protection mechanisms in rheumatoid arthritis patients.

Both publications by Islamov et al. stress that the physical and biochemical mechanism of action of bioresonance therapy is unclear.

The biochemical non-specificity of the bioresonance effect is an important result from these two studies. Biochemically non-specific protective mechanisms are activated in the cells. The physical mechanism of action and its effects at a biochemical level cannot be demonstrated experimentally. In theory, we are still currently dependent on hypotheses.

However, the non-specific biochemical effect of bioresonance therapy observed does fit a possible physical/biochemical model (being prepared for publication): We surmise that super-weak electromagnetic interactions of this kind act – at least in part – on the biochemistry of the cell via what are known as entropic forces. The electromagnetic information changes the entropic situation in the cell and therefore activates biochemical self-regulation programmes non-specifically in relation to the electromagnetic information.

In a controlled study, Nienhaus (2006) investigated the effect of bioresonance therapy on functional gastro-intestinal symptoms. The bioresonance therapy produced a marked and significant effect, in comparison to the placebo group, on the subjective symptoms, physical examination results, temperament, and the conductance sector measurement. The mean score for the collated primary end-points (subjective symptoms, physical examination results) improved by 48.2% in the bioresonance group and by only 3.8% in the placebo group. The results confirm an uncontrolled practice study of psychosomatic disorders published by Nienhaus in 1999. The author reported no side effects.

The controlled study by Saweljew et al. (2001) examined the effect of bioresonance therapy on children and adolescents with allergy-induced bronchial asthma. According to the authors, bioresonance therapy significantly reduces the number, duration and severity of episodes as well as the daily dose of bronchodilators and corticosteroids in comparison to the control

group. According to the results of functional examination methods, the bronchial patency parameters improved significantly. Furthermore, a reduction in the histamine sensitivity of the bronchi, a reduction in exercise-induced bronchospasm and an increase in general physical fitness to work were documented. The bioresonance therapy had no negative effects on the children and adolescents, according to the authors.

Trofimow et al. (1997) conducted a controlled study of bioresonance therapy in patients with obstructive airways diseases. The end-point was a complex assessment of effectiveness before and after treatment, including subjective and objective findings. According to the authors, more positive, more complete, and longer-lasting results of the most diverse degrees were achieved in the bioresonance group than in the control group in the majority of patients. Compared with the control group, more positive treatment results were obtained in a shorter period of time and the drug dosages used were markedly reduced.

Machowinski and Kreisl (1999) conducted a controlled study of bioresonance therapy in patients with a mild chronic liver disease. End-points were serum AST, ALT and gamma-GT enzyme activity. The authors documented that bioresonance therapy was able to induce the reconstitution of damaged cells in the presence of mild liver damage. As a result of bioresonance treatment, the mean AST enzyme activity fell by 42% in 12 weeks (untreated control: -4%), that of ALT by 50% (untreated control: -5%) and that of gamma-GT by 38% (untreated control: -7%). Therefore, it was within the upper range of normal after treatment.

Papcz and Barpvic (1999) conducted a controlled study in elite athletes suffering from overuse syndrome, which often leads to increased injury. Within a relatively short time and with few treatment sessions, better results were achieved in the group receiving the bioresonance therapy than in the control group, which was treated using standard conventional methods. In the control group, there was a mean reduction in pain severity from 5.25 points before the therapy to 2.60 points afterwards, compared in the bioresonance group with 5.41 points before the therapy and 0.61 points afterwards.

The comparative study by Wille (1999) showed bioresonance therapy to have no effect under the prevailing conditions in stuttering children. However, Wille stressed another important finding of the study, "... *that the phenomenon of stuttering does not lend itself to the study of an alternative medicine method, ...*".

It is important that in this type of study, too, no side effects were reported.

In a recent carry out study (Schuller und Galle 2007) the clinical effect of electronically stored nosods was tested on patients with rheumatic deceases in the frame of the exogenic bioresonance therapy. The results were positive. The electric skin conduction of the terminal acupuncture points reduced significantly by the verum treatment. The placebo treatment did not show any significant results. The mean subjective state of health, the sedimentation of the blood cells, the mean calcium value and the redox potential of the blood improved significantly. The other biochemical parameters and the cellular parameters of the blood indicated no or only slight changes.

Korenbaum et al. 2006 proved in a double blind trial a significant difference between the absorption spectra of electronic copies of homoeopathic nosods and placebos in the range of 700 to 800 nm. [Korenbaum VI, Chernysheva TN, Apukhtina TP, Sovetnikova LN: Absorption spectra of electronic-homoeopathic copies of homoeopathic nosodes and placebo have essential differences. *Forsch Komplementärmed* 2006;13:294-297.] The production of the electronic copies is essentially equal to the electronic storage of bioactive substances on water-alcohol-mixture done by the bioresonance method.

The study from Uellendahl in 2008 gives evidence for the efficacy of the MORA-Color-Therapy in patients with chronic functional pain in the system of movement. The MORA-Color-Therapy is a combination of endogenous bioresonance therapy and electronic color therapy. It was a retrospective, comparative study with patients doing sports and non sports. The subjective pain-score improved in 96% of the patients of the sports group significantly and in the non sports group in 66% of the patients. The difference between the sports and non sports group were significant.

A retrolectiv, longitudinal cohort study with the bioresonance method (561 case reports) was published by Rahlfs and Rozehnal (2008). In order to investigate the clinical effectiveness, they assessed the experiences of physicians and nonmedical practitioners made with the bioresonance therapy in 14 fields of indications. The therapists described on a standardised case report form cases that had been treated with bioresonance. The effectiveness of bioresonance therapy was judged to be satisfactory to very good in 92.4% of the cases. This overall positive judgement pervades in all examined fields of indications. A good or even a very good tolerability was described in 94.7% of the cases.

The fields of indication were: Acute and chronic infections, diseases of the respiratory tract, cardiovascular diseases, autoimmune diseases, tumors, gastroentero diseases, liver diseases, musculoskeletal diseases, endocrinum diseases, injuries, pain, menstruation complaints, teeth diseases.

Appendix: Human clinical studies prove the effectiveness of the bioresonance therapy

The following tables summarise all the human clinical studies of bioresonance therapy that are known to us. Those studies conducted after Schumacher's publication, to refute its effectiveness findings, are additionally discussed in brief.

The studies were conducted with the MORA III device, the MORA Super device or MORA III device clones (such as the BICOM device and IMEDIS device).

Indication	Author	Title	Journal	Scientific design	Scientific database
Rheumatic conditions	E.F. Gogoleva	New approaches to diagnosis and treatment of fibromyalgia in spinal osteochondrosis	Ter Arkh 73 (4), 40- 45, 2001 In Russian, German translation available	Controlled (comparative) study, N = 30 Institute for Outpatient Treatment; State Medical Academy, Orenburg	Medline index, peer-reviewed
	O. Maiko, E.F. Gogoleva	Outpatient bioresonance treatment of Gonarthrosis	Ter Arkh 72 (12), 50-53, 2000 In Russian, German translation available	Controlled (comparative) study, N = 35 Institute for Outpatient Treatment; State Medical Academy, Orenburg	Medline index, peer-reviewed
	B.I. Islamov et al.	Effect of bioresonance therapy on antioxidant system in lymphocytes in patients with rheumatoid arthritis	Bull. Exp. Biol. Med. 134 (3), 248-250, 2002	Controlled study, N = 20 Institute for Theoretical and Experimental Biophysics and Institute for Rheumatology, Russian Academy of Science	Medline index, peer-reviewed
	B.I. Islamov et al.	Bioresonance therapy of rheumatoid arthritis and heat shock proteins	Bull. Exp. Biol. Med. 128 (11), 1112-1115, 1999	Controlled study, N = 6 Institute for Theoretical and Experimental Biophysics and Institute for Rheumatology, Russian Academy of Science	Medline index, peer-reviewed
	Schuller, J. Galle, M.	Untersuchung zur Prüfung der klinischen Wirksamkeit	Forsch. Komplementärmed. 2007; 14:289-296.	partly controlled study, N = 21 Medical practice study, Graz	Medline index, peer-reviewed

		elektronisch abgespeicherter Zahn- und Gelenksnosoden bei Erkrankungen des Rheumatischen Formenkreises [Study of the clinical effects of electronically stored nosods from tooth diseases and articular rheumatism on persons with rheumatic diseases]			
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Indication	Author	Title	Journal	Scientific design	Scientific database
Allergies/ Intolerances	P. Schumacher	1. Bioresonanztherapie von Allergien und Unverträglichkeiten (1990) [Bioresonance therapy of allergies and intolerance] 2. Bioresonanztherapie der Pollinose (1991) [Bioresonance therapy of hay fever]	Not a journal publication; published in: Biophysikalische Therapie der Allergien, p. 149ff, Sonntag-Verlag, Stuttgart 1998	2 prospective, Non-controlled, N = 164 (1990), N = 115 (1991) Medical practice study, Innsbruck	
	A.V. Chervinskaya et al.	MORA therapy for respiratory and allergic diseases (1997)	Not a journal publication In Russian, German translation available	Controlled (comparative) Study, all documentation available, N = 56 University of St. Petersburg, Clinical Science Centre of St. Petersburg	
	J. Hennecke	Energetische Allergietherapie: Möglichkeiten und Erfahrungen mit der Bicom-Bioresonanztherapie [Energy therapy of	Ärztezeitschr. f. Naturh.verf. 35 (6), 427-432, 1994	Retrospective observational study, N = 200 Medical practice study	Amed index

		allergies: Possibilities of and experience with Bicom bioresonance therapy]			
	H. Kofler et al. (see comment in Galle 2002)	Bioresonanz bei Pollinose [Bioresonance in hay fever]	Allergologie 19 (3), 114-122, 1996	Controlled (placebo- controlled) study, N = 42 University of Innsbruck Dermatology Clinic	Medline index, peer-reviewed
	M. H. Schöni et al.	Efficacy Trial of Bioresonance in Children with atopic dermatitis	Int. Arch. Allergy Immunol. 112, 238-246, 1997	Controlled (comparative, placebo- controlled) study, N = 16 Alpines children's hospital, Davos	Medline index, peer-reviewed
	C.F. Cheng et al.	A study to evaluate the efficacy of bioresonance therapy of MORA device on allergic symptoms (2008)	Not a journal publication	Non-controlled study, N = 32 Danshuei Township Public Health Center, Taipei County, Taiwan	
	C.F. Cheng et al.	A study to evaluate the efficacy of electronic homeo- pathic remedies on allergic symptoms (2008)	Not a journal publication	Non-controlled study, N = 32 Danshuei Township Public Health Center, Taipei County, Taiwan	
	S. Huang et al.	Klinische Behandlung vom allergischen Schnupfen und Bronchialasthma der Kinder mit dem Bioresonanztherapie -gerät [Clinical treatment of allergic rhinitis and bronchial asthma in children with the bioresonance device]	Zhejiang Medical Journal 2005; 27(6):457-458 In Chinese, German translation available	Controlled, comparative study, N = 181 The first public hospital, Tonglu, China	
	J. Yang, L. Zhang	300 Handlungs- beispiele gegen Asthma mittels BICOM-Grätes für die Kinderpatienten	Maternal and Child Health Care of China 2004; 19(9):126-127	Controlled, comparative study, N= 300 Center of research of the childrens hospital	

		[300 Examples of treatment against asthma with the bioresonance device in children]	In Chinese, German translation available	in Jinan, China	
	M. Xu et al.	Klinische Beobachtung der Behandlung vom chronischen Nesselausschlag mit dem Bioresonanztherapiegerät. [Clinical observation of the treatment of chronic urticaria with the bioresonance device]	China Journal of Leprosy and Skin Diseases 2005; 21(7):533-534 In Chinese, German translation available	Non-controlled study, N = 56 Research Institute of dermatology and vein diseases in Shandong, China	
	Y. Feng et al.	Die neulich klinische Beobachtung der Heilwirkung mit Bioresonanztherapie-gerät in 150 Fällen der Kinder-Allergierkrankheit [Newly clinical observation of the effectiveness of the bioresonance therapy in 150 children allergic diseases]	Chinese Journal of Contemporary Pediatrics 2005; 7(3):257-258 In Chinese, German translation available	Non-controlled study, N = 150 Medical Clinic-Academy of the Shandong University, Jinan, China	
	X. Zhang et al.	Klinische Beobachtung über 54 Behandlungsfälle gegen Nesselausschlag mittels BICOM Bioresonanztherapiegerät [Clinical observation in 54 cases with urticaria by the bioresonance device]	China Journal of Leprosy and Skin Diseases 2005; 21(8):651 In Chinese, German translation available	Non-controlled study, N = 54 Children-Clinic of Shanxi, Section of Dermatology, Taiyuan, China	
	X. Du et al.	Klinische Beobachtung über 79 Behandlungsfälle gegen allergische Hautkrankheiten mittels Bioresonanzgerät [Clinical observations in 79	Chinese Journal of Practice Medicine 2005; 4(5):259 In Chinese, German translation available	Non-controlled study, N = 79 Children Hospital Jinan, Shandong, China	

		cases with allergic skin diseases by the bioresonance device]			
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Indication	Author	Title	Journal	Scientific design	Scientific database
Functional Gastro-intestinal symptoms (functional oesophageal symptoms, irritable stomach, irritable colon, etc.)	J. Nienhaus, M. Galle	Wirkung einer standardisierten MORA-Bioresonanztherapie auf funktionelle Magen-Darm-Beschwerden (2003) [Effect of standardised MORA bioresonance therapy on functional gastro-intestinal symptoms]	Forschende Komplementärmedizin 2006;13-28-34	Controlled (placebo-controlled) study with all case reports, N = 20 Medical practice study, Mühlheim	Medline-Index, Peer-reviewed
Obstructive airways diseases (bronchial asthma, etc.)	B.P. Saweljew et al.	Bioresonanztherapie bei der komplexen Therapie von Kindern mit Asthma bronchiale [Bioresonance therapy in the complex treatment of children with bronchial asthma]	Medizinisch-wissenschaftliche und Lernmethodische Zeitschrift N2, June 2001, p. 111-130 German translation available	Placebo-controlled study, N = 23 Institute of Paediatrics, Moscow	Published after submission of dissertations
	W. I. Trofimow et al.	MORA-Therapie bei obstruktiven Atemwegserkrankungen (1997) [MORA therapy of obstructive airways diseases]	Not a journal publication In Russian, German translation available	Controlled (comparative) study, all documentation available, N = 35 University of St. Petersburg, Clinical Science Centre of St. Petersburg	
	S. Huang et al.	Klinische Behandlung vom allergischen Schnupfen und Bronchialasthma der Kinder mit dem Bioresonanztherapie-gerät [Clinical treatment of allergic rhinitis and bronchial asthma in children with the bioresonance	Zhejiang Medical Journal 2005; 27(6):457-458 In Chinese, German translation available	Controlled, comparative study, N = 181 The first public hospital, Tonglu, China	

		device]			
	J. Yang, L. Zhang	300 Behandlungs- beispiele gegen Asthma mittels BICOM-Grätes für die Kinderpatienten [300 Examples of treatment against asthma with the bioresonance device in children]	Maternal and Child Health Care of China 2004; 19(9):126-127 In Chinese, German translation available	Controlled, comparative study, N= 300 Center of research of the childrens hospital in Jinan, China	
Overuse syndrome in elite athletes	B.J. Papcz, J. Barpvic	Clinical study on the use of the Bicom Resonance Therapy with the syndrome of high performance athletes	Published in EHK 1999, 48 (7), 449- 450 under the title: Einsatz biophysikalischer Fre- quenzverfahren beim Überlas- tungssyndrom von Leistungssportlern [Use of biophysical frequency techniques in overuse syndrome in elite athletes]	Controlled (comparative) study, N = 12 Study Hospital Maribor, Slovenia	Amed index

Indication	Author	Title	Journal	Scientific design	Scientific database
Liver dysfunction	R. Machowinski, P. Kreisl	Prospektive randomisierte Studie zur Überprüfung der Behandlungserfolge mit patienteneigenen elektromagnetischen Feldern (BICOM) bei Leberfunktionsstörungen [Prospective randomised study to verify therapeutic successes with patients' own electromagnetic fields (BICOM) in liver dysfunction]	Not a journal Publikation, In: Wissenschaftliche Studien zur Bicom Resonanztherapie, p. 77-92, Institute for Regulatory Medicine, Gräfelfing, 1999	Controlled (comparative) study, N = 14 Medical practice study	
Psychosomatic disorders	J. Nienhaus	Studie zur Therapie psychosomatischer Beschwerden mit MORA [Study of the	Not a journal publication, In:	One-arm, prospective study, N = 79 Medical practice study	

		treatment of psychosomatic disorders with MORA]	MORA und Psychosomatik, p. 65-74, Med-Tronik, Friesenheim 1999		
Stuttering	A. Wille	Bioresonanztherapie (biophysikalische Informationstherapie) bei stotternden Kinder [Bioresonance therapy (biophysical information therapy) in stuttering children]	Forsch. Komplementärmed. 6, suppl. 1, 50-52, 1999	Controlled Study (comparative), N = 14	Medline index, peer-reviewed
Functional pain in the musculo-skeletal system	U. Uellendahl	Darstellung der MORA-Color-Methode in der Behandlung von chronischen funktionellen Schmerzen am Bewegungsapparat. [The MORA-Color-therapy in the treatment of chronic functional pain in the moving system]	Rigorosearbeit zum Dr. päd. an der Sportwissenschaftlichen Fakultät der Universität Bratislava, 2008 In preparation for publication	Retrospective, comparative study, N = 100 Medical practice study	
Many fields of indications (Infections, respiratory tract, cardiovascular, autoimmun, tumors, gastroentero, liver, musculoskeletal, endokrinum, injuries, pain, menstruation, teeth)	V.W. Rahlfs, A. Rozehnal	Wirksamkeit und Verträglichkeit der Bioresonanzbehandlung [Efficacy and tolerability of bioresonance treatment]	Erfahrungsheilkunde 2008; 57(8):462-468	Retrolektiv, longitudinal cohort study, N = 541 idv-Datenanalyse und Versuchsplanung, Gauting, Deutschland	

Additional comments

All of the studies, except those by Kofler et al., Schöni et al. and Wille, document the effectiveness of the bioresonance method. This is why in some countries, yet in particular in Russia, MORA bioresonance therapy is reimbursed by the statutory health insurance funds. Furthermore, a whole series of studies in animal and plant models document the biological efficacy of MORA bioresonance therapy (including the digitally stored bioactive substances) (see M. Galle: MORA-Bioresonanztherapie ... und es funktioniert doch! [MORA Bioresonance therapy ... and it does work!] Promedicina-Verlag, Wiesbaden 2002).

Regarding the “negative” studies, there is currently a huge need for discussion, presented all too briefly below:

1. Re Kofler et al.:

For a detailed comment, see M. Galle, MORA-Bioresonanztherapie ... und es funktioniert doch! [MORA Bioresonance therapy ... and it does work!], ProMedicina-Verlag, 2002, p. 212-221. In my opinion, the study can be interpreted as positive, at least in parts.

2. Re Schöni et al.:

This study has not yet been discussed in detail and critiqued by us. The most important methodological errors, in my opinion, are:

- a) The concomitant administration of highly active medicinal products (e.g. antibiotics, corticosteroids) in the bioresonance therapy group and the control group reduces the effect of bioresonance, according to therapeutic experience to date.
- b) The statistical data analysis seems inappropriate. For two (total Costa score and pruritus score) out of the three most important end-points, bioresonance therapy achieved a two to three times greater effect than the control treatment. *Therefore, a clear mean improvement was achieved by the bioresonance therapy in comparison to the control treatment.* According to Schöni et al., however, this is not significant at the 5% level. The spread is extremely wide. Wilcoxon does not seem to be an appropriate statistical test here. Admittedly, to make meaningful statistical suggestions, the original data situation has to be examined carefully. Unfortunately, however, the original data are not available to me.

The improvement brought about by the bioresonance therapy is at least a tendential effect – even according to the analysis by Schöni et al. –, which points to the effectiveness of the bioresonance therapy. However, Schöni et al. stress only what was negative for bioresonance therapy in this study. They make no mention of the positive. They do not discuss the results neutrally.

It seems to me that Schöni et al. use the statistics inappropriately to obscure the effect of the bioresonance therapy. This assumption appears reasonable based on their biased discussion.

M. Galle: MORA-Bioresonanztherapie... und es funktioniert doch. Promedicina, Wiesbaden 2002.

– a short summary of the chapters

In chapter 1 I give a short summary of the following chapters.

In chapter 2 I discuss basically the reductionism and the holistic ("biocybernetic") way to describe and understand living systems. Subsequently the development of the bioresonance therapy is discussed in a holistic point of view.

In chapter 3 I apply hypothetically a part of the theory of the biophotons ($f = 10^{14}$ Hz) to the frequency range which is postulated for the bioresonance therapy ($f = 1 - 10^6$ Hz). So I define in a physical manner the "pathological vibration" (=isolated vibration) in the frame of the endogenous bioresonance.

In my opinion, the basic physical mechanism of "bioresonance" is the destructive interference of the pathological vibration with itself and the following integration in the coherent and connected vibration field.

I have also published these ideas in a short text in *Erfahrungsheilkunde* 2005 (Galle M: Biophotonen und MORA-Bioresonanz. *EHK* 2005;54:293-300).

For "destructive interference" see also the website of F.A. Popp (www.lifescientists.de).

In chapter 4 I give an explanation of the exogenous bioresonance: how do very low electromagnetic vibrations of substances can have effects on living systems in the low frequency range? Our answer: electromagnetic spin-resonances from the molecules (in the magnetic field of the earth) transmit the specific information of the substances to living systems.

In chapter 5 I discuss basically the complementary aspects of the exogenous and endogenous bioresonance.

In chapter 6 I advocate the non-statistically way (single case studies) of recognize causality.

The chapter 7 describes the hitherto existing controlled studies with animals and plants done with the endogenous and exogenous bioresonance.

In chapter 8 I defend the bioresonance therapy against the critic from allopathic physicians and physicists, which do not understand that living systems are open systems far away from thermal equilibrium and which know little about the theory of Electromagnetic Coherence in biology. I also discuss in detail the study of Kofler et al. 1996.

Chapter 9 deals with the fundamental philosophical and cognition-based difference of the holistic and reductionism medicine in an axiomatic manner. These two models (perspective) of medicine are not compatible, but complementary.

In chapter 10 I leave the classic and in part the modern natural science and give a short introduction to a post-material science, for example Bechmanns proposal to integrate non-physical fields ("spirit") in a new science of life. I connect these ideas with the bioresonance.