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Ulrich G. Randoll

# East Meets West in a New Scientific Approach to the Treatment of Chronic Illnesses

## Abstract

The need for a better scientific understanding of Yoga/Ayurveda. The key role of rhythms Microvibrations, the extracellular matrix and the “logistics” of living cells. Energy, muscle relaxation and hysteresis: a discovery with far-reaching implications. Matrix Rhythm Therapy and its pathways of action. Common principles of Matrix Rhythm Therapy and Yoga/Ayurveda, from traditional and modern scientific standpoints. How Matrix Rhythm Therapy can provide a missing link in the scientific understanding of Yoga Potential symbiosis of Yoga/Ayurveda and Matrix Rhythm Therapy.

## Introduction

Recent times have witnessed an enormous growth of interest in alternatives to conventional Western medicine, including Yoga/Ayurveda, traditional Chinese medicine (TCM) and various Western forms of “complementary medicine”. Essential to these alternative approaches is their emphasis on returning to the essential holistic *unity* of the human being (both mind and body), on removing barriers and blockages that stand in the way of the natural processes of self-healing and self-organization, on disease prevention, returning to a healthy lifestyle and bringing the human being back into inner balance and harmony with Nature.

There is no doubt about the urgent need for such alternative approaches today. On the one hand, conventional Western medicine has achieved major successes in the battle against infectious diseases, in surgical and diagnostic techniques and quite generally in the treatment of acute illnesses. But at the same time there is a large and growing array of *chronic illnesses*, problems of aging and “civilizational diseases” connected with stress and unhealthy lifestyles, where the approaches of Western medicine are much less effective, often seem to point in the wrong direction or even to be *part of the problem*.

Dissatisfaction with Western textbook medicine also has much to do with a growing sense that it embodies a too narrow, too fixed view of living processes, of the nature of health and sickness and of human beings in general. Conventional Western medicine has more and more lost sight of the fundamental nature and unity of the human organism, as it emerged over millions of years in interaction

with its natural environment. Instead, the human body is seen as a kind of machine, like an automobile, and the doctor as a technician or repair man whose task is to fix the machine. In this context less and less importance is given to the role of empathy and the ability of a doctor to develop insights into the situation and needs of a concrete individual patient. Instead, tables of measurements of specific physiological parameters have increasingly taken the primary place in determining therapies according to fixed schemata.

In Western thinking and practice this so-called “evidence-based medicine”, narrowly focused on objective experimental measurements and clinical studies, has more and more supplanted the earlier, more human-oriented tradition of “experienced-based medicine”, based on the long-term observations and experience of doctors and therapists in treating patients.

By contrast, Yoga/Ayurveda, as also the author's Matrix Concept and Matrix Rhythm Therapy, which we shall describe below, place primary emphasis on the fundamental *unity* of the human organism, including the mind and body, on the promotion of its overall *self-healing* powers (*Swasthya*), the *removal of blockages* to its natural function and the restoration of a properly *balanced dynamic state*. Here “health” means much more than simply the absence of malfunctions in a mechanistic sense; rather, health means above all a *healthy way of living and a healthy way of thinking*. The doctor and healer is not a simple technician making measurements, but must work on the basis of empathy (*Karuna*) and to be a kind of *teacher* as is emphasized in Yoga. These common features between

Yoga/Ayurveda and the author's Matrix Concept point to a new potential synergism between East and West in the treatment of chronic illnesses. At the same time, the scientific results embodied in Matrix Rhythm Therapy may open the way toward a more adequate understanding of how Yoga actually works.

The Matrix Concept and Matrix Rhythm Therapy originated from scientific investigations carried out in the 1990s by the author and colleagues at the Department for Maxillofacial Surgery and Traumatology of the University Clinic in Erlangen, Germany. These investigations were motivated by frequent experiences of the failures of conventional Western treatments in dealing with cancers, chronically non-healing wounds, chronic pain and many other conditions.

Looking for alternative approaches, the author investigated living cells obtained by direct biopsies from patients, using high resolution video microscopy. The observed morphological changes in cells adapting to various changes in their immediate environment, pointed to the decisive significance of the so-called extracellular matrix (ECM) which surrounds all cells in the body, for health and disease – a realization embodied in the author's Matrix Concept. Proceeding further, he investigated the possible influence of muscular motion on the characteristics of the ECM. Examining the transition from the so-called silent tremor to synchronized shivering of muscle tissue under various conditions, he was able to identify coherent oscillations already on the cellular level, in video microscopic films of cultures of muscle cells. It became evident that these microvibrations of muscle tissue play an essential role in the microcirculation of the body, in determining the characteristics of the ECM and its exchanges with the cells. These studies led finally to development of Matrix Rhythm Therapy, a new method which has proven extraordinarily effective in the treatment of a wide variety of chronic conditions.

All of this is presented in detail in the author's recent book "The Matrix Concept – Fundamentals of Matrix Rhythm Therapy"<sup>1</sup>. In the present article we shall limit ourselves to a summary description of the new therapy method and its scientific basis, focusing on points of intersection with Yoga/Ayurveda which could prove to be extremely important in the future.

### The need for a better scientific understanding of Yoga/Ayurveda

The usefulness and, in many cases, *extraordinary effectiveness* of the methods of Yoga in treating chronic illnesses, are well-established<sup>2</sup>. Despite much research, however, we are still very far from having a fully *scientific* understanding of these curative effects.

This was affirmed for the case of Yoga, for example, in a

recent lecture by the well-known Yoga expert and researcher Rajan C. Narayan<sup>3</sup>. He emphasized that the proven healing and preventative effects of Yoga are still only partially understood from a scientific point of view. On the one hand, Yoga is able to propose a powerful holistic model for medicine as a whole. On the other hand, from a modern scientific standpoint this model remains a *hypothesis*, which still needs to be explored and proven.

Many studies, for example, have shown that Yoga is effective in reducing the body's stress-related sympathetic nervous response and stimulating the parasympathetic response, restoring a healthy sympathovagal balance (see, for example<sup>4,5</sup>). But exactly *how* – by what *causal* routes – the techniques of Yoga actually produce this and many other effects on the human organism – including, according to Narayan, *changes on the fundamental level of gene expression in the cells* – is still far from being fully understood. To be sure, traditional and modern scientific approaches to understanding Yoga contain many fruitful and important ideas – ideas which no doubt reflect aspects of reality and are no doubt at least partly true. But we are still very far from a complete, verifiable scientific understanding. A similar situation prevails for TCM and other approaches of complementary medicine.

In this respect a *crucial missing link* may be provided by scientific investigations of this author and his colleagues on the essential role of *coherent microvibrations of human muscle tissue* for the functioning of the whole organism, and on the phenomenon of *entrainment* of vibrations, which will be explained below.

We are convinced, in fact, that the investigations leading to Matrix Rhythm Therapy could open the door to an improved scientific understanding of Yoga, while at the same time offering a possible means to greatly enhance the effectiveness of Yoga therapies. The reason for this involves three basic points:

**First**, Matrix Rhythm Therapy has a clearly-established scientific basis.

**Second**, Matrix Rhythm Therapy has many basic features in common with Yoga and other methods of complementary medicine, thereby creating a *bridge* to their scientific understanding.

**Thirdly**, Matrix Rhythm Therapy has the specific capability to induce a *complete physiological relaxation of muscle tissue*. Activating peripheral proprioceptors as well, Matrix Rhythm Therapy achieves a kind of whole body "reset" of the peripheral neuromuscular system including the central nervous system, which is rarely achieved with Yoga or other methods alone.

The latter point is of great importance, owing to the fact that

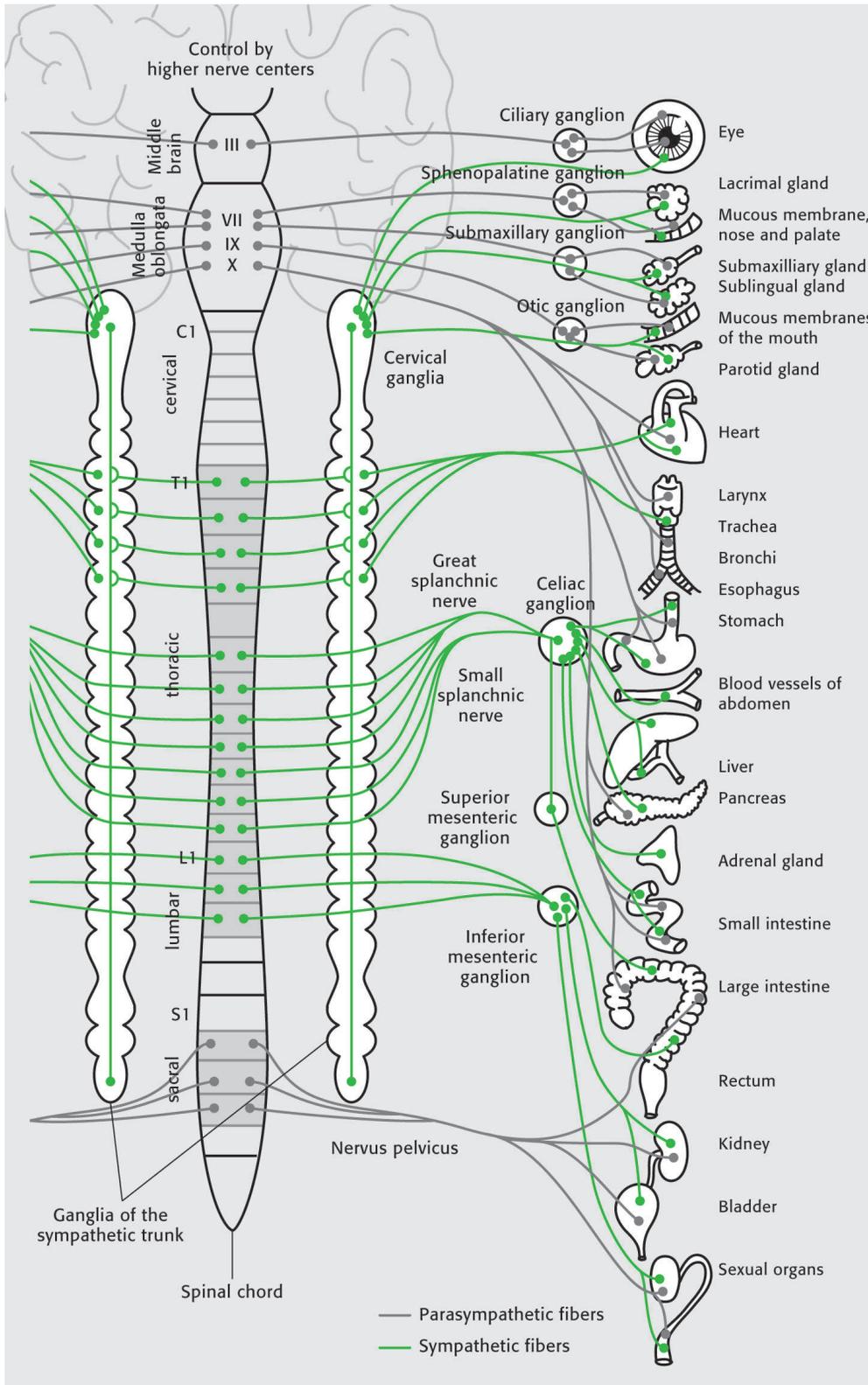


Figure 1: This picture shows the same system in different medical traditions or cultures: Chakra system from Ayurveda view, Meridian view from China perspective and sympathetic trunk from Western view. The focus of all treatment approaches is to get back the balance and the energy flow.

an adequate state of relaxation is often a *precondition* for an effective and safe practicing of Yoga exercises, as well as for meditation. The ability of Matrix Rhythm Therapy to resolve common problems connected with the hardening of muscle tissue and loss of the ability of muscles to fully relax – what we call *hysteresis* (see below) – points to the potential for a powerful *symbiosis* of the two methods. We emphasize the notion of symbiosis here, because Matrix Rhythm Therapy does not pretend to replace Yoga, especially not the *spiritual* side of Yoga which is essential to its principles and significance for the human individual. On the other hand, *Matrix Rhythm Therapy also has a spiritual side*, connected with the universal ideas of unity, coherence and resonance, and especially with the empathic relationship between the patient and the therapist. Certainly we do not claim to have all the answers. But we hope this article will stimulate fruitful new directions of work, combining the wisdom and creativity of the East and West together to develop a new scientific approach to the prevention and treatment of chronic illnesses.

### The key role of rhythms

For very good reasons, *rhythms (Nada)* are a central theme in virtually all the mentioned alternatives to conventional Western medicine. All of Nature, our whole Universe is organized on the basis of rhythms and vibrations, linking the largest to the smallest scales. Quantum physics demonstrates, for example, that the smallest elementary particle is inseparably connected to a wave which extends to all of space. Most importantly, the *unity* of the living organism is expressed in processes that are exclusively *rhythmic* in character. In a healthy living organism these rhythms are coupled with each other in a coherent, harmonic manner. Illness results when the essential rhythmic coherence is weakened or disrupted.

Although this has instinctively been taken into account in therapies in all cultures, from the earliest times on, the full potential of utilizing rhythms and their couplings for the diagnosis, treatment and prevention of illnesses, and for the restoration of true health, has only recently begun to be fully realized. A major breakthrough in this direction is the *Matrix Rhythm Therapy* developed by the author. Matrix Rhythm Therapy has many fruitful links to Yoga/Ayurveda, TCM and various forms of complementary medicine. Here the universal principle of vibrations and rhythms takes a concrete, *scientifically verifiable form*.

Matrix Rhythm Therapy is based on the fact that healthy muscle cells of the body constantly *vibrate* at frequencies in the range of 8-12 Hz, which corresponds to the frequency range of alpha waves in the brain. These *microvibrations* were originally discovered by Rohrer in the 1930s and can be observed and measured by several different methods. Extensive studies, carried out by the author and collaborators with the help of piezoelectric sensors and

special video microscopy, showed that microvibrations play a crucial role in the timing of internal cell processes, and – most importantly – in the dynamic interaction between cells and the surrounding medium, the extracellular matrix. This interaction is vitally important for the whole organism, because the entire flow of substances and energy to and from the cells occurs via the ECM, including the supply of nutrients and oxygen as well as the removal of toxic products. Microvibrations function both as “pump” as well as regulator and “internal clock” for these processes.

In this context a crucial role is played by the *degree of coherence* between the microvibrations of cells in a given tissue and in the skeletal musculature as a whole. It is obvious that when the oscillations of the various individual cells become incoherent and out of phase with each other, they generate interferences, tend to cancel each other out and weaken their pumping effect. This can in turn disorganize the whole “logistics” of the vitally important flows to and from cells, leading to illnesses (see our discussion of logistics in the next section). Thus, the overall health of the human organism depends to a large extent on the coherence of the microvibrations in its musculoskeletal system.

As far as we know, efforts to develop a scientific understanding of Yoga/Ayurveda have so far failed to take account of the existence of the natural microvibrations of muscle tissue of their fundamental significance for the totality of body functions, and well as the issue of coherence. We shall take a closer look at this overlooked missing link in the following sections.

### Microvibrations, the extracellular matrix and the “logistics” of living cell

There is a large scientific literature about the extracellular matrix (ECM), so we shall only make a few summary remarks here.

The first single-celled organism lived in interaction with the primordial ocean around it. In the course of evolution many-celled organisms evolved from single-celled organisms. Organized from more and more complex cell associations, they became able to leave the sea and conquer land. In this process, the place of the primordial sea as the medium for nutrition and elimination of substances by early organisms, was taken by the extracellular matrix system, which is the medium immediately surrounding all cells in higher multicellular organisms. The cells of our body live in the ECM like fish in water. As it constitutes the immediate environment of the cells, interactions with the ECM are key to the epigenetics and control of gene expression on the cellular level. We believe that the ECM is essential to both Eastern and Western approaches to holistic medicine. It is the foundation of our Matrix Concept.

The use of the term “matrix” here reflects the fact, that the ECM of the human body is pervaded by a complex, highly-organized structure of protein fibers and other components, which plays an essential role in interaction with the body's cells. The system of the extracellular matrix pervades the entire organism. Containing a network of connective and interstitial tissue, including the fascia, it is linked with all the cells of the organism.

The ECM takes on particular significance through the fact that it mediates the microcirculation and all the metabolic flows in the body, including all exchanges of signals. There is no other way for anything to get into a cell, except by passing through the ECM. This includes all nutritional inputs to the cell and elimination of waste materials from the cell, both essential to the living process. In this context the author has found it very instructive to apply the economics concept of “logistics” to processes on the cellular level. Any unit of human productive activity, such as a farm or an industrial plant, depends upon the reliable supply of energy in various forms; on the supply of labor, materials and equipment; on the supply of water; on the transport of its products from the place of production to outside destinations; on the removal of waste, on information and communication networks etc. “Logistics” signifies the activity of meeting all of these requirements, via *highly organized interactions* with other productive units and the outside world generally.

The situation of a living cell is entirely analogous: as we noted above, the existence and health of each individual cell is largely a function of the *logistics* of its exchanges the surrounding environment – the ECM – and, via the ECM, with the entire organism. The health of the organism depends to a very large extent on the quality of logistics on the cellular and tissue levels.

Two examples will help to grasp the scale and importance of cell logistics for the human body. Every day 20-30 liters of capillary exudates flow through the ECM, or which nearly 90% is reabsorbed. The remaining 2-3 liters, rich in protein, fatty waste products and dead blood cells, is transported as lymph through the lymphatic system and processed in the lymph nodes, with the remainder being recycled into the venous circulatory system. All of this involves transport of substances in and out of cells via the ECM.

Another example is the enormous scale of ATP turnover in the human body. As is well-known, ATP is generated in the mitochondria of our body's cells as a carrier of chemical energy. 10% of the body mass is mitochondria and an average adult generates (and consumes) a total of *180 kilograms* of ATP each day! A large part of this occurs in the *skeletal musculature*, which is the quintessential “motor of the body”.

It is exactly here, in the organization and maintenance of the

logistics of the body's cells, that *microvibrations* play an essential role. Investigations by the author and others have shown that the microvibrations of the skeletal musculature in particular are essential to the entire logistics of the body's cells. The author's studies indicate that the most important role of these vibrations lies in their *pulsatory effect* on the veno-lymphatic branch of the blood circulation. *The microvibrations are essential to functioning of the entire vascular system of the body*, including the blood circulation in the whole capillary system. The pressure generated by the heart muscle would by itself not be sufficient for this. The action of the heart is supported by the *suction* effect which is generated by the oscillating pressure of the skeletal muscle microvibrations on the veins and lymphatic vessels. Not only do the flow characteristics of all body fluids depend on these vibrations, but also the elasticity of all body components, i.e. all its colloidal elements, and to a significant extent also the basic dynamics of the physico-chemical reaction processes taking place in various tissues, down to the level of gene expression.

We shall now look more closely at one key aspect, of great importance for Yoga, namely the process of *relaxation* of muscles.

### **Energy, muscle relaxation and hysteresis: a discovery with far-reaching implications**

It is a common place opinion, that muscle tension is the dominant energy-consuming process in muscular movement, and that the relaxation or stretching of muscles is essentially a passive process. But investigations by the author and collaborators, including especially video-microscopic observations of pulsating muscle cells, demonstrated that *the reality is just the opposite*: In order for a muscle to contract, the individual muscle cells must beforehand have built up a “readiness potential” in the form of a sizeable electrical potential difference between the interior of the cell and the extracellular matrix. Building up this potential requires energy, in the form of ATP. Thus, *muscle relaxation is the actual energy-consuming process*. Related to this, we found that changes in the elasticity and plasticity of muscles were directly connected with changes in the microvibrations of the individual cells and changes in the conditions of supply of nutrients and removal of waste products from the cells. When there are disturbances in the quality and coherence of microvibrations, this can lead to inadequate logistics for the cells, to insufficient oxygen supply via the ECM and finally to a cellular “energy crisis” in which the production of ATP is not sufficient for the muscles to fully relax.

When inadequate logistics leads to an “energy crisis” in muscle cells, one immediate result can be characterized as “*hysteresis*”: Instead of the healthy cycle of contraction and relaxation, in which the muscle returns to its original relaxed state following a contraction, there are contraction residues,

which cannot be voluntarily resolved. Over time the musculature hardens, movements become limited and there are shortenings also in the fascia system, with resulting squeezing and impairment of the motion of the cells, vessels and nerves passing through the fascia. If these conditions persist, due to lack of ATP reproduction as a result of poor oxygen supply to the cells, then the muscle fibers enter an irreversible “injury phase”. Thereby they lose their capability to repolarize, and rupture when stretched to their original length.

*A cellular energy crisis* – and more generally, an *impairment of vital cell logistics* – provides the best explanation for the myofascial, myoacidotic, myotendinous and other pain syndromes, for problems of chronic swelling and inflammation, impaired healing of wounds and a *great variety of other chronic illness and conditions* afflicting the population.

**Matrix Rhythm Therapy and its pathways of action**

The idea of treating illness and functional disturbances by means of the coherent rhythms which the system itself produces when it is fully functional, was an essential result of clinical observations as well as cell-biological experiments. The loss of rhythmical-temporal ordering in the organism is an important indication of an emerging illness. Indeed, a wide range of chronic illnesses have their essential origin in *disturbances* in the character and overall

coherence of microvibrations in body tissues, with resulting degradation in cellular logistics and in the quality of the non-equilibrium dynamic states which characterize the living process on the cellular, tissue, organ and body levels.

It was clear that the quality of the extracellular matrix with respect to its ability to insure the requirements of cells – including oxygen, trace elements, vitamins, electrolytes, hormones, nutritive substances as well as the supply of heat, for example – could only be improved when the extracellular medium has been brought into an adequate state of coherent vibratory motion.

On the basis of extensive research it has been possible to develop a highly effective therapeutic device and method for restoring the healthy, coherent microvibrations in tissue – and thereby the quality of the ECM and the logistics of the cells interaction with it – via the mechanism of entrainment of oscillations by an externally-applied vibrational signal. Entrainment is a fundamental phenomenon in the physics of nonlinear processes, in which coherent oscillations emerge from the coupling of vibrating systems whose original frequencies can differ significantly from each other. This contrasts with the much more well-known phenomenon of resonance in linear systems, which requires that the frequencies of the participating oscillators must be nearly equal. Much more interesting and complex situations can arise, when the interaction between systems is strongly nonlinear, i.e. when there is a feedback between the mode of

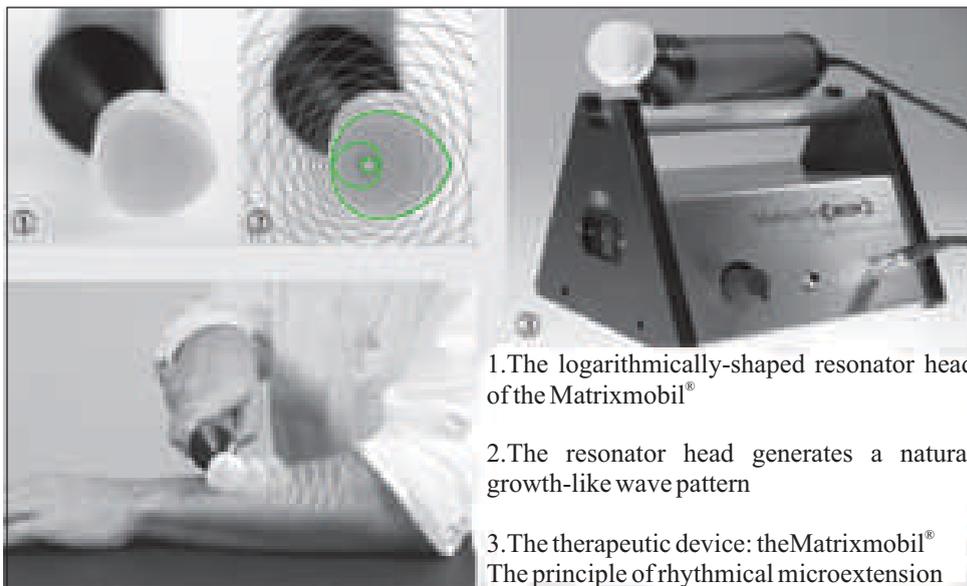


Figure 2: The Matrixmobil®

interaction and the internal dynamics of the participating systems. In 1665 the Dutch physicist and astronomer Christiaan Huygens noted how two pendula with significantly different lengths and natural frequencies, began to oscillate synchronously with each other when they were mounted on a common base of support. The faster pendulum slowed down somewhat and the slower one sped up somewhat, until they came to be swinging in phase (or counterphase) at a common frequency. Huygens called this effect “entrainment”. The same effect occurs in the coupling between oscillators and an external signal, when the interaction is strongly nonlinear.

In Matrix Rhythm Therapy, the external signal is applied using a device called the Matrixmobil®. Developed by the author for this purpose, the Matrixmobil® is a rod with a spiral-shaped vibration head which vibrates in the physiological region of 8-12 Hz. In the hands of the therapist, this device generates a vibratory space-time pattern to which the body tissues can orient themselves, in returning to their healthy coherent vibratory mode. The device is specially designed in order to be able to propagate vibrations deep into the body, utilizing the natural resonance properties of tissue. For this purpose the device generates a combination of mechanical vibrations together with an oscillating electromagnetic field induced by permanent magnets mounted in the vibration.

The therapy begins in a diagnostic mode. The vibration head of the device is placed on the body at a suitable location, and the tissue's response to the vibrational input is assessed. The musculature is stimulated along its length, in its various layers, using vibrations in the physiological frequency region between 8 and 12 Hz. The patient experiences this as pleasant. Therapeutic application of the Matrixmobil® generates a rhythmic microstretching (microextension) of tissues which is adjusted to the natural microvibrations of the muscle cells. Utilizing the principle of entrainment of vibrations, this rhythmical stretching acts to restore the quality and coherence of the cellular microvibrations. By changing the pressure applied to the vibration head and rotating the apparatus, the therapist modulates the intensity and the focus of the signal propagated into the tissue.

All processes in and around the cells are thereby brought back into “well-tuned cooperation”. An excessive  $\alpha$ - $\gamma$  tonus (nerve-triggered muscle tension) – connected with accumulated overall psychical and bodily stress – normalizes itself, causing the pleasant feeling at the outset of the therapy to spread out. The improved oxygen availability leads to relaxation and a decrease in the blood pressure, initiating the regenerative, self-healing processes of the tissue, and strengthening them. The rhythmic microstretching process, which reaches deep into the tissue, can even loosen conglomerations of fascias (fibrous tissue) and cells in deeper layers. The body's systems including the neural, hormonal, blood and lymphatic systems are restored

to a balanced state. In sum, we achieve a “psycho-neuro-muscular reset”.

Important “targets” for this vibrational therapy are the musculoskeletal system and most particularly the sympathetic trunk, thereby acting *directly* on the autonomous nervous system. Not accidentally, these are also focuses of Yoga therapy and TCM, as well as a variety of massage methods in Ayurveda, osteopathy and other systems of medicine.

The is the most effective target domain for Matrix Rhythm Therapy not only because of its large share of the total body weight, but above all due to its decisive function as a “milking organ” for the microcirculation of the muscle tissue itself. The **skeletal muscles** constitute the single largest organ in the body, making up about 45% of total body weight and thereby constituting the largest collection of cells of a single type. The skeletal musculature has developed in the course of evolution into the biggest “propulsion organ” of the human body, and it plays the decisive role in fluid transport in the body, especially for the micro-circulation in and around the individual cells. It was thus natural to orient the therapy especially to the vibrational behavior of the skeletal musculature, to its amplitude range and to its frequency range of 8-12 Hz.

The importance of the **sympathetic trunk** for the therapy of many chronic illnesses is well established, including especially conditions related to stress. For reduction of load on the sympathetic nervous system, Matrix Rhythm Therapy is initiated *paravertebrally along the sympathetic trunk*, and then further along the major nerve plexi. This also corresponds to the course of the meridian, and overlaps with the use of acupuncture points in TCM and Chakras in Yoga/Ayurveda.

Matrix Rhythm Therapy of the sympathetic trunk can achieve a generalized improvement in the function of organs along the vagus nerve, restoring the sympathovagal balance overall. Body functions thereby recover their natural equilibrium.

One of the most striking effects of Matrix Rhythm Therapy, which is rarely achieved by other methods, is to overcome the hysteresis of muscles, eliminating all contraction residues and muscle hardenings and thereby accomplishing a total “reset” of the musculature with enormous benefits to the well-being of the person.

In all of this, the key to the successful practice of Matrix Rhythm Therapy using the Matrixmobil® is that *its application must be guided by the sensitive hands of a trained matrix therapist*. Indeed, a significant feature of the new approach to diagnostics and subsequent therapy is a reorientation from the prevalent model of the overly top-heavy, “cognitive oriented” physician, back to a more

self-organizing systems far from thermodynamic equilibrium.

Both emphasize improving the *overall* functioning of the body, as opposed to Western textbook medicine's focus on "repairing" specific faults.

Both emphasize the key role of achieving a *balanced state* for the organism, meaning dynamic balance, balance at a high energy level, rather than the balance of dead matter. In the language of modern science: stable states far from thermodynamic equilibrium.

### Both emphasize rhythms and vibrations (Nada)

Both emphasize the *flow of energy (Prana)*, in a broad sense not restricted to the reductionist concept of modern physics. Matrix Rhythm Therapy is based on the discovery that the supply of energy to cells depends to a large extent on the quality of the microvibrations which constitute a kind of "breathing" on the cellular and tissue level, closely connected with the turnover of ATP, the main energy carrier in the human body. We could thus say that Matrix Rhythm Therapy, by acting to restore and enhance the coherence of these microvibrations, is equivalent to a *Pranayama* for cells.

Both emphasize the notion of *release*, of removing blockages to natural flows and functions, including restoring the healthy elasticity of tissue. A key aim of Yoga, *release* appears in Matrix Rhythm Therapy in a special form, namely the "release" of muscle tissue through restoration of the vital "logistics" of supply of the cells, which in turn depends on restoring the synchronous microvibrations of the tissue, and accomplishing a "reset" of muscle tissue. Of great importance is the fact, underlined by the scientific analysis of Matrix Rhythm Therapy's effects, that the relaxed state coincides with the state of highest energy.



Figure 3: Treatment of cervical plexus and scalene in thoracic outlet syndrome patient.

sensitive, empathetic doctor or therapist. Working with the Matrixmobil® requires a direct corporal handling of the patient, in order to identify disturbances and changes in the resonance characteristics of tissue. In the final analysis it depends on the *spiritual quality* of the relationship between patient and therapist.

Matrix Rhythm Therapy has established itself as a standard treatment method in the areas of perioperative and trauma surgical care, in rehabilitation, in pain as well as in chronic illnesses of the nervous, skeletal and locomotor systems. Similarly in prevention or reduction of complications resulting from overexertion, injuries, accidents and surgical interventions, as well as in competitive sports and in veterinary medicine. Preventive medicine is another area of successful application. In Mumbai, India, the Matrixmobil® is utilized daily by surgically active doctors with patients suffering from chronic pain in the joints and the back, in order to decide for a given case whether either an operation, or the conservative-functional Matrix Rhythm Therapy is indicated. There our device has earned the honorary designation, "The Orthopedist's Stethoscope".

Matrix Rhythm Therapy frequently produces results which would ordinarily be put in the category of "miracle healing". But, in fact there is no real "miracle" involved – as we have emphasized, Matrix Rhythm Therapy is based on well-established scientific principles.

### Common principles of Matrix Rhythm Therapy and Yoga/Ayurveda, from traditional and modern scientific standpoints

The origins and methods of Matrix Rhythm Therapy and Yoga/Ayurveda are obviously extremely different, with Matrix Rhythm Therapy being a product of modern Western science while Yoga/Ayurveda comes from the ancient wisdom of the East. But on a deeper level they share important common principles, as the following observations should indicate. We begin with a brief conceptual comparison, highlighting traditional concepts of Yoga/Ayurveda, and then turn to similarities which are shown by the results of scientific research into the effects and possible mechanism of action of Yoga.

#### From the standpoint of traditional concepts

Both Matrix Rhythm Therapy and Yoga/Ayurveda place *self-healing (Swasthya)* at the center of their therapeutic strategies.

Both emphasize the holistic nature, the *unity* of a living organism (*Yuj as the Sanskrit root of Yoga, to unite*), with Yoga focusing especially on the unity of mind and body of the human being. In modern language, both Yoga and Matrix Rhythm Therapy take a *systems approach* to the living organism, coherent with what is now called the dynamics of

*Pancha Karma* (Ayurveda) = purification, is promoted on the cellular level by Matrix Rhythm Therapy also by improving cell logistics, permitting the transport of toxic products out of the cells and the ECM.

## Chakras

An important target for Matrix Rhythm Therapy treatment is the sympathetic trunk, intersecting with the meridians of acupuncture and their correspondents in Yoga/Ayurveda.

Both emphasize the special moral role and duty of the therapist/healer, who must exercise compassion (*Karuna*) and act as a teacher.

Turning now to the results of modern research, we now briefly examine three main pathways for the curative action of Yoga which have been identified so far<sup>6,7,8,9</sup>. Here, again, we find important similarities and complementarities relative to Matrix Rhythm Therapy.

1. Effect of Yoga “stretching”, as in Hatha Yoga, on the fascial system of the body, which is part of the extracellular matrix. This is sometimes referred to as “*myofascial release*”, restoring the elasticity of tissue. Here the target of action coincides to a large extent with that of Matrix Rhythm Therapy, while the method of action appears to be completely different and to some extent complementary: Yoga by stretching and forming the fascia, Matrix Rhythm Therapy by restoring coherent microvibrations and thereby enhancing the energy supply to tissue via the mechanism of entrainment. But as we shall indicate below, the differences may be less than they appear at first glance; it is quite possible that Yoga also stimulates coherent microvibrations, by an indirect route.

2. “Pumping” effect of Yoga exercises in enhancing the overall circulation in the body, including the microcirculation of blood, lymph, and removal of toxic products from tissue. This goal largely coincides with that of Matrix Rhythm Therapy in terms of improving the overall logistics of cells in the body.

3. Effect of Nada, Pranayama and meditation Yoga on the sympathovagal balance, specifically promotion of parasympathetic activity and “calming” of sympathetic activity in the autonomic nervous system. This is probably the most commonly cited and well-documented effect of Yoga.

Indeed, modern research has shown that the autonomic nervous system (and with it the regulation of essential organs and metabolic functions of the body) is inseparable from the higher functions of the brain, including cognitive function. Among other things this provides a basis for scientifically understanding the extraordinary ability of trained Yogas to consciously influence and even control

autonomic functions of their body. By comparison, Matrix Rhythm Therapy operates on the sympathovagal balance via the entrainment of vibrations.

## How Matrix Rhythm Therapy can provide a missing link in the scientific understanding of Yoga

We want to now emphasize several key points, which we think can shed new light on the scientific bases of Yoga and complementary medicine generally.

The central point is the decisive importance of *cell logistics* and the role of microvibrations and the ECM in that context, which has been demonstrated by Matrix Rhythm Therapy and the scientific principles upon which Matrix Rhythm Therapy is based. We would propose that the methods of Yoga/Ayurveda and their effects on the human being should be re-examined from this standpoint – opening up a large field for scientific investigations.

Indeed, the crucial importance of coherent microvibrations of the skeletal musculature for human health and for the prevention and treatment of illnesses, proven by Matrix Rhythm Therapy, places the scientific study of Yoga in an *entirely new context*, calling for new ideas and new research. We would emphasize that the effects of improvements in cell logistics reach down all the way to the level of gene expression, which has been pointed to by R. C. Narayan as the fundamental area of action of Yoga/Ayurveda.

## To this we would add the following specific comments

On the one side it is not hard to imagine that techniques such as Pranayama breathing, by improving the oxygen supply to cells, can generate many positive effects via the resulting improvement of cell logistics and the alleviation of cellular “energy crises”. It is entirely possible, on the other side, that Asana Yoga postures, by restoring the natural resonance quality of the body, increase the coherence of microvibrations which propagate throughout the skeletal musculature and the fascia, thereby also benefitting cell logistics. The same may also be true for the Yoga techniques including meditation/concentration, which have been shown to improve the sympathovagal balance and evoke alpha wave activity in the brain (the so-called relaxation response). This would not be surprising, owing to the coincidence in frequency range between microvibrations of the skeletal musculature and alpha waves in the brain, and for other reasons. Investigations by Rohrer and others already revealed a close relationship between psychological state, muscle tone and microvibrations. But here much more research is needed.

An analogous question arises concerning the stretching and “pumping” effects of Yoga exercises, referred to above. On the one hand, to the extent these techniques lead to improvements in the logistics of cells via the ECM, their

curative effects follow similar pathways to those of Matrix Rhythm Therapy. On the other hand, it would be of great interest to investigate the impact of Asanas, for example, on the microvibrations of the skeletal musculature, and to what extent such an impact might be responsible for improvements in microcirculation, attributed to Yoga exercises.

Specifically, we think that the scientific analysis of Yoga/Ayurveda could greatly benefit from the realization, that the *relaxed state* of muscle cells is actually the *higher energy state*. Relaxation is a form of *energization*. This runs directly against the common place notion, that more energy means more action and less relaxation. In fact, the higher-energy state is the more *peaceful* state. The new insight into the relationship between relaxation and energy in muscle tissue can be immediately relevant to a scientific understanding of the effects of Pranayama Yoga.

#### **Potential symbiosis of Yoga/Ayurveda and Matrix Rhythm Therapy**

Particularly important is the potential for *powerful synergies* between Matrix Rhythm Therapy and Yoga/Ayurveda. Like all known therapeutic approaches, Yoga and Ayurvedic medicine are not all-powerful, but have their own limitations, including in the area of chronic illnesses. Yoga and Ayurvedic medicine developed many centuries before the discovery that the human body is composed of trillions of individual cells, each of which must be seen as a living organism in its own right, existing within a certain environment in the body – the extracellular matrix – and depending upon its interactions with that environment and with other cells.

Naturally, the treatments and exercises of Yoga and Ayurveda all have effects on the cellular level; but without deeper knowledge about the organization of the living process on that specific level, the Yoga and Ayurvedic practices are often not able to address the specific types of cellular imbalances which are the cause of even quite common chronic illnesses. These include, for example, common problems associated with the hardening of tendon and muscle tissue, lack of range of motion (ROM) and loss of the ability of muscles to fully relax, which is often a *precondition* for an effective and safe practicing of Yoga exercises.

This points to a specific, very important area for a future symbiosis between Matrix Rhythm Therapy and Yoga, connected with the problem of *hysteresis* of muscle tissues, mentioned above: In very many patients, the muscles have lost the capability to achieve a complete relaxed condition. They are not physically/physiologically able to return to their resting state. In such cases, the practice of muscle stretching, typical for many Yoga exercises, has only limited therapeutic effectiveness and there is an increased danger of injury. A unique characteristic and capability of Matrix

Rhythm Therapy is that it is able, by restoring coherent tissue microvibrations, to overcome this hysteresis problem and permit muscles again to reach the state of complete relaxation – which is in fact the higher energy state, as we have emphasized.

A very significant difference between Matrix Rhythm Therapy and Yoga lies in the fact that Yoga therapy is fundamentally based on the patient's own activity, while Matrix Rhythm Therapy is administered by a therapist, with the patient essentially passive. Matrix Rhythm Therapy concentrates on the microscopic quality of tissues, while Yoga is focused on macroscopic motions. Matrix Rhythm Therapy is called for above all in cases where the motions required for Yoga exercises are prevented or limited by muscle blockages, paralysis or pain conditions, and can trigger injuries or inflammation at the insertion points of the tendons. In such cases Matrix Rhythm Therapy can restore the ability to practice Yoga, by first overcoming avoidance postures in a passive mode, followed by a gradual transition to active motion. In this gradual process, microscopic and macroscopic motions are activated together. Once this has been accomplished, Yoga exercises and overall activity are generally sufficient to maintain a healthy dynamic on the microscopic (cellular) level.

We think that Matrix Rhythm Therapy can be useful even for patients who are able to practice Yoga exercises with no difficulty, namely as an ideal *preparation* for Yoga and related Ayurvedic therapies, with the potential for greatly increasing their effectiveness. In this symbiosis Matrix Rhythm Therapy would be applied before beginning Yoga exercises, to achieve a fundamental “reset” of the body's musculature to a state of total physiological relaxation. This state of total relaxation permits the spirit to free itself from the body, as an ideal preparation for the most profound level of Yoga.

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**Confirmation:** I confirm that in my article I write about my own observations, practical evidences on patients of the last years and the bases what I believe today. In the last years we made studies on workers in Mercedes Company, Faber Castell, and DHL with our Matrix Rhythm Therapy to prove the evidence of the systemic approach : The principles of treatment approaches from different cultures are based on systemic management concepts. Evidence of the eastern tradition came from experience, evidence in the west came from scientific linear experiments but ends nowadays scientifically in holistic systemic concepts based on cell biology and principals of systemic regenerative medicine. That is the meeting point of old Ayurveda, Yoga and TCM traditions with the actual western state of the art science.

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