Energetics and athletic performance

Introduction

The vital energy machine, VE-1, enhances athletic performance. Experience has shown that the VE-1 can assist athletes in surpassing their personal best and in achieving results they never thought possible. How does this happen?

What is peak performance?

Athletes know that peak performance is associated with extraordinary physical and mental states. Researchers and athletes alike have correlated these conditions with a whole-body feeling-state of interconnection and intercommunication. Ideally, each and every tissue and cell is prepared and poised to meet moment-to-moment demands in a coherent, cooperative, and synergistic manner. All communication channels are open, so that each part of the body knows what each other part is doing, and each part can make its perfect contribution to the whole effort. For example, the difference between success and failure for the weightlifter depends on the ability to coordinate a range of muscles throughout the body. In team sports, the feeling-state includes an enhanced awareness of the movements of both team members and opponents. Modern research is beginning to discern the scientific basis for these phenomena (1). The findings have significance for all performers and for therapists who specialize in sports injury.

Athletes know when they have achieved an internal state of being totally prepared, present, aware, and focused. It is revealed to observers as graceful and coordinated movement. In team sports, optimum performance shows itself as individual as well as group communication and coordination. It is a state of optimum wellness and aliveness that leads to world records, championships, and gold medals.

When we think of optimum functioning of the human body, we usually think of the coordination provided by the nervous system. But we shall see that recent research has added new and important dimensions to the concepts of communication and coordination. Other communication systems are being described that operate faster than nerves, and that extend throughout all of the tissues in the body, including but not limited to the nervous system. The VE-1 appears to enhance the operation of these other systems.

Mental rehearsal

Research and experience have demonstrated that mentally rehearsing an event, without actually moving the body, can substantially enhance performance (2). The reason mental rehearsal is so effective is that the brain and nerves generate patterns of electric and magnetic energy a second or so <u>before</u> any movement occurs (3). These electrical and magnetic patterns are illustrated in Figure 1. The electrical signals (upper trace in Figure 1) travel through the nerves and surrounding tissues; the magnetic fields pass through the skin and can be recorded with sensitive measuring instruments in the spaces around the body (lower trace and inset in Figure 1).

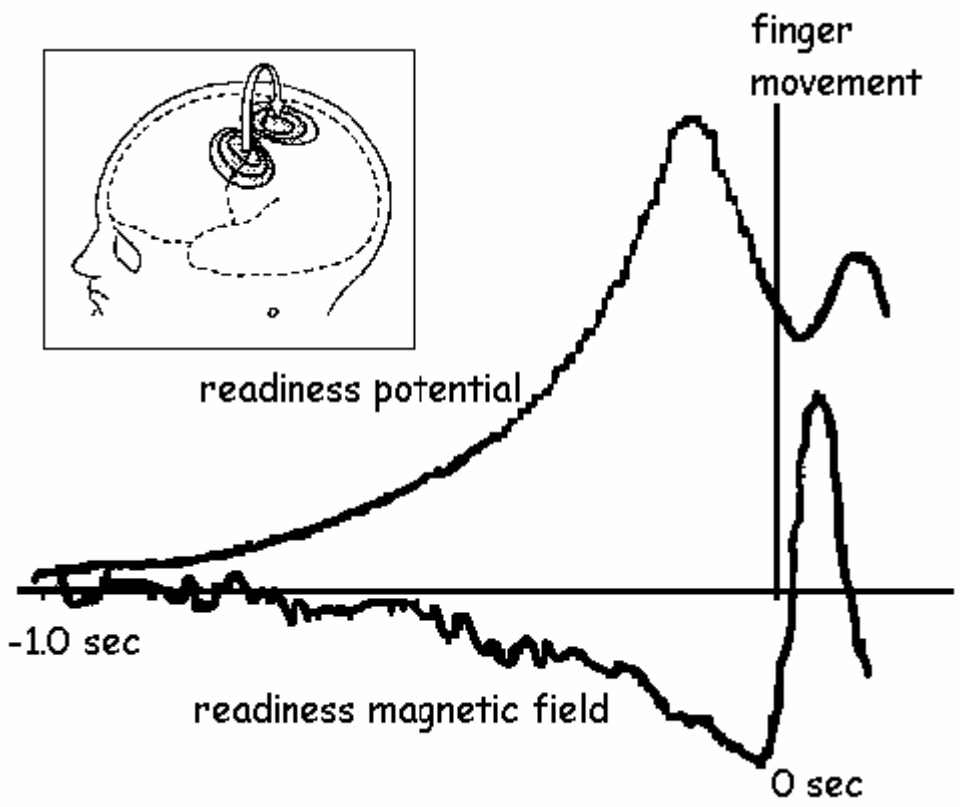

Figure 1. Readiness potential (upper curve) and readiness magnetic field (lower curve) begin approximately a second before finger movement. The inset shows a magnetic field recorded in the space around the head. This magnetic field is produced by electrical activity taking place in the sensory-motor cortex. The readiness potential is re-drawn from Kornhuber & Deecke 1965, and the readiness magnetic field is re-drawn from Deecke Weinberg & Brickett 1982 (see reference 3).

Mental rehearsals, without movement, give rise to "sub-threshold muscle activity" (4). It is thought that this intricate preparatory energetic "motor sequence" spreads throughout the body, to every tissue and cell. The process "pre-conditions" biochemical pathways, energy reserves, and patterns of information flow so that every part of the body is poised to communicate and work cooperatively at the instant of demand (5). Other research has shown that repeated and intense practice of a movement increases the magnetic output from corresponding areas of the sensory-motor cortex in the brain (6).

The VE-1 appears to enhance the same informational and energetic pathways that are augmented by both repeated practice and mental rehearsal of an athletic performance. These energetic pathways exist throughout the tissues of the body, including but not limited to the nervous system.

Which communication channels are involved?

The VE-1 appears to substantially enhance communications throughout the athlete's body. It accomplishes this by gently rejuvenating all of the communication circuits and

pathways between the various tissues and cells. Where are these channels located, and precisely what do we mean by *rejuvenation*?

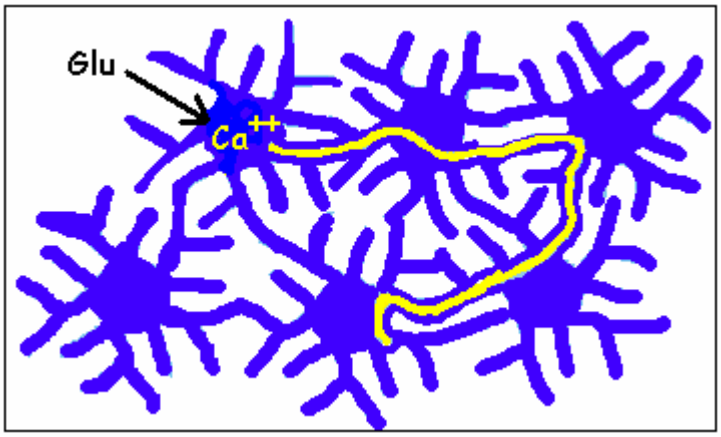

Figure 2. Recently it has been discovered that the connective tissue cells in the brain, such as the astrocytes, form an interconnected cellular web-work called the astrocytic syncytium. Neurotransmitters such as glutamate (Glu) can trigger the entry of calcium ions into the cell, and a wave of calcium current is conducted from cell to cell to cell (shown in yellow). Re-drawn from Ventura, RE: http://synapses.bu.edu/anatomy/astrocytes/astrocyt2.stm (7)

Physiologists have described many kinds of communication within the body; more are being discovered. The nervous system is the best understood communication system in the body. All sensations and all movements are signaled by electrical impulses traveling from sensory receptors to the brain and from the brain to the muscles.

Recently it has been discovered that connective tissue cells in the brain (called glia and astrocytes) and connective tissue cells surrounding the peripheral nerve fibers (Schwann cells) constitute an additional continuous communication system that supports and regulates nerve functions (8). It is called the perineurium ("peri" refers to "around" so these are the connective tissue fibers and cells surrounding the nerves). Figure 2 shows the network of interconnected astrocytes in the brain. The yellow line shows the pathway followed by an electrical wave conducted from cell to cell by calcium ions.

To get a picture of this system, imagine making all of the nerve cells in the body vanish. The outline of the perineural system would remain as a short of "shadow system," as shown to the right in Figure 3. Here we see the profile of the nervous system on the left and the corresponding contour of the perineural nervous system on the right. The functioning of this perineural system has become a new frontier in medical research:

Glial cells are active partners of neurons in processing information and synaptic integration. The active properties of glia, including long-range signaling and regulated transmitter release, are beginning to be elucidated. Recent insights suggest that the active brain should no longer be regarded as a circuitry of neuronal contacts, but as an integrated network of interactive neurons and glia (9).

Classic research by Robert O. Becker, M.D. revealed the vital role of electrical signaling in the perineural nervous system in injury repair (10).

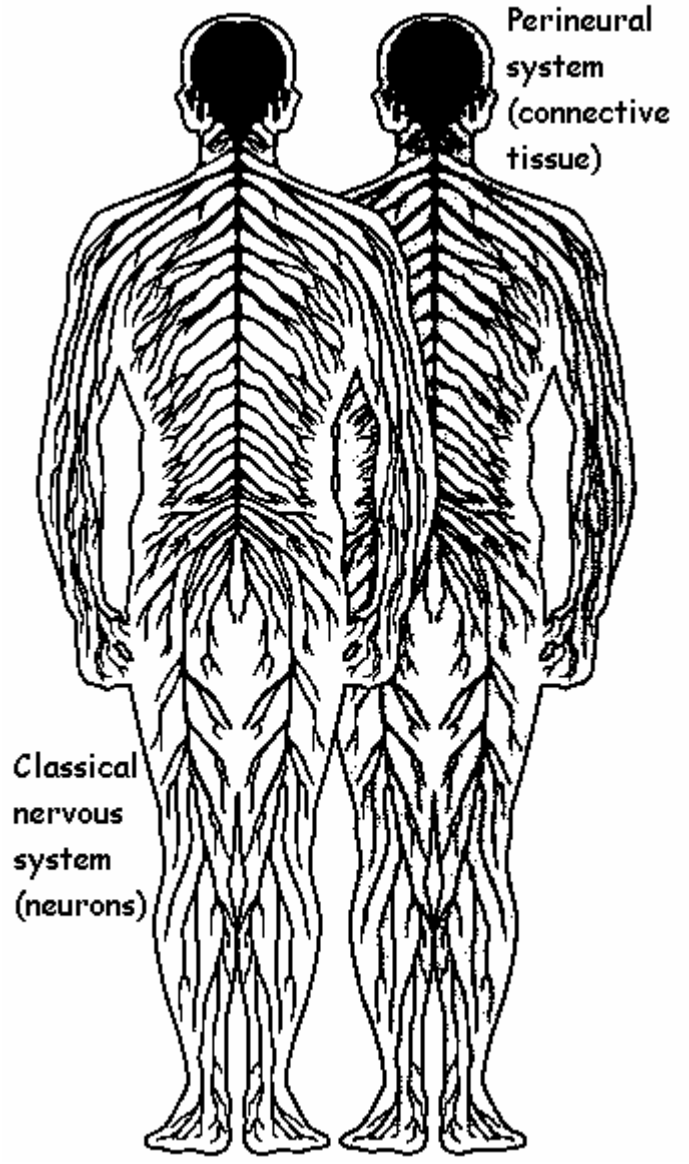

Figure 3. Imagine making all of the nerve cells in the body (left) vanish. The outline of the perineural system would remain as a short of "shadow system," as shown to the right. From Oschman JL 2000. Energy Medicine: the scientific basis. Churchill Livingstone, Edinburgh, Figure 15.2, p. 225 (11).

Communications in the musculo-skeletal system

All movements, of the body as a whole and of any of its parts, are accomplished by the action of the musculo-skeletal system. This is the assembly of muscles, tendons, ligaments, cartilage, fascia, and bones that form most of the structure of the body. This is the system that must be optimally organized for peak athletic performance. All forces

generated by muscles are conducted through the connective tissues (Figure 4). Flexibility, elasticity, resiliency, and strength are attributes of a well-organized connective tissue system. We shall see that there is another level of organization of the connective tissues, which involves various kinds of communication taking place within the matrix itself.

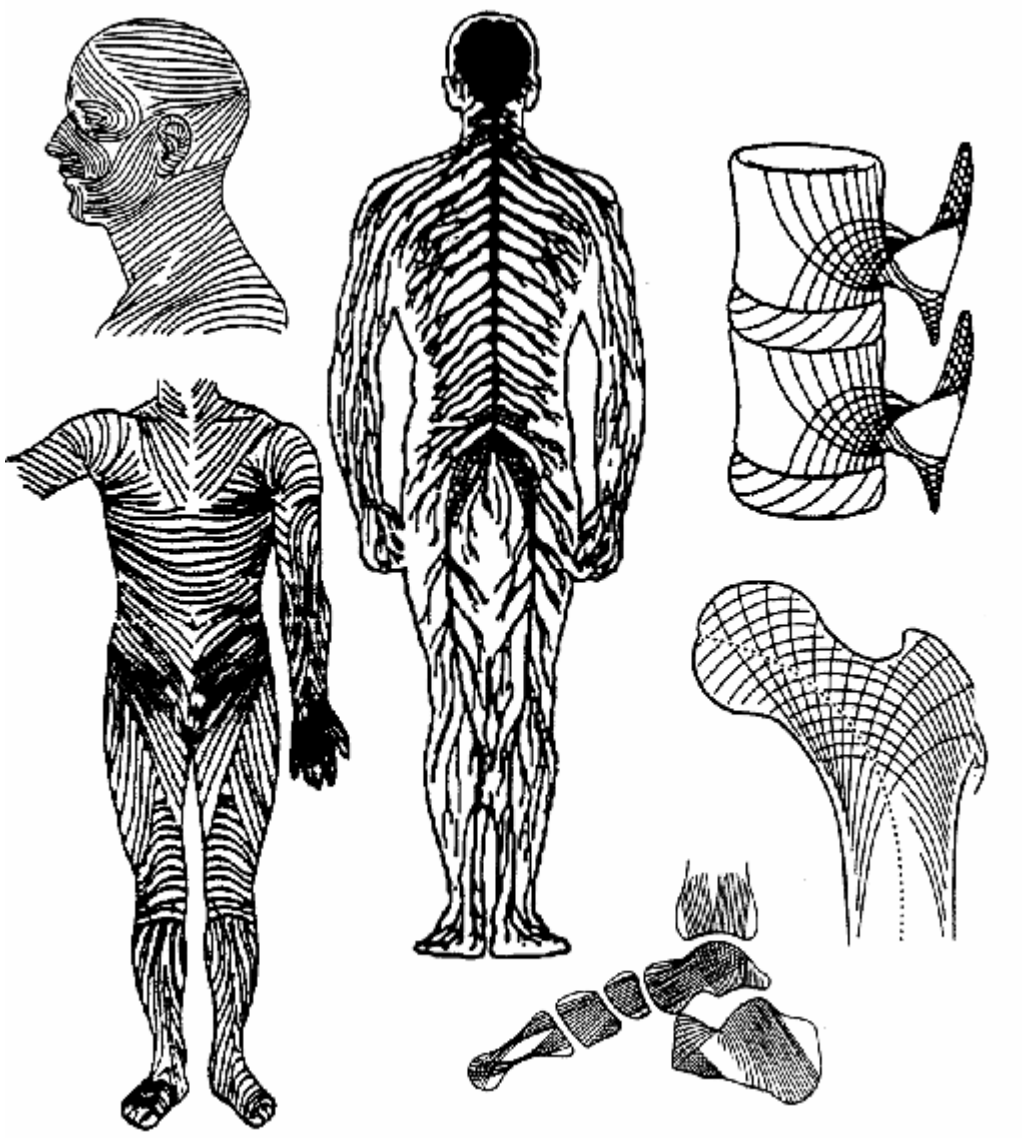

Figure 4. Fibrous systems of the connective tissue. Two illustrations to the left show the fiber tracts, known as Langers Lines, in the superficial fascia. Center illustration is the perineural connective tissue. Three illustrations to the right show the fiber tracts running through bone. Sources of the illustrations are given in reference 12.

Embedded in the musculo-skeletal tissues are various kinds of cells that are responsible for maintaining and nourishing and re-modeling the body's framework. Cell biologists have recently discerned the molecular interconnections between these cells and the connective tissues in which they are embedded. Important molecules called integrins connect the extracellular or connective tissue matrix with the web-work within the

interiors of cells, called the cytoskeletons (13). Within the cells, the cytoskeletons are linked with the nuclear matrices and the genetic material, DNA.

The entire connecting system, consisting of the extracellular matrix, the cytoskeletons, and the nuclear matrices, is called *the living matrix* (Figure 5). This system extends into and communicates with every nook and cranny of the body. All of the great systems in the body (the nervous system, digestive tract, immune system, musculo-skeletal system, circulatory system, the various organs and glands) are composed of this continuous fabric. It has been suggested that optimal wellness and aliveness is associated with complete interconnection and intercommunication through the living matrix (14).

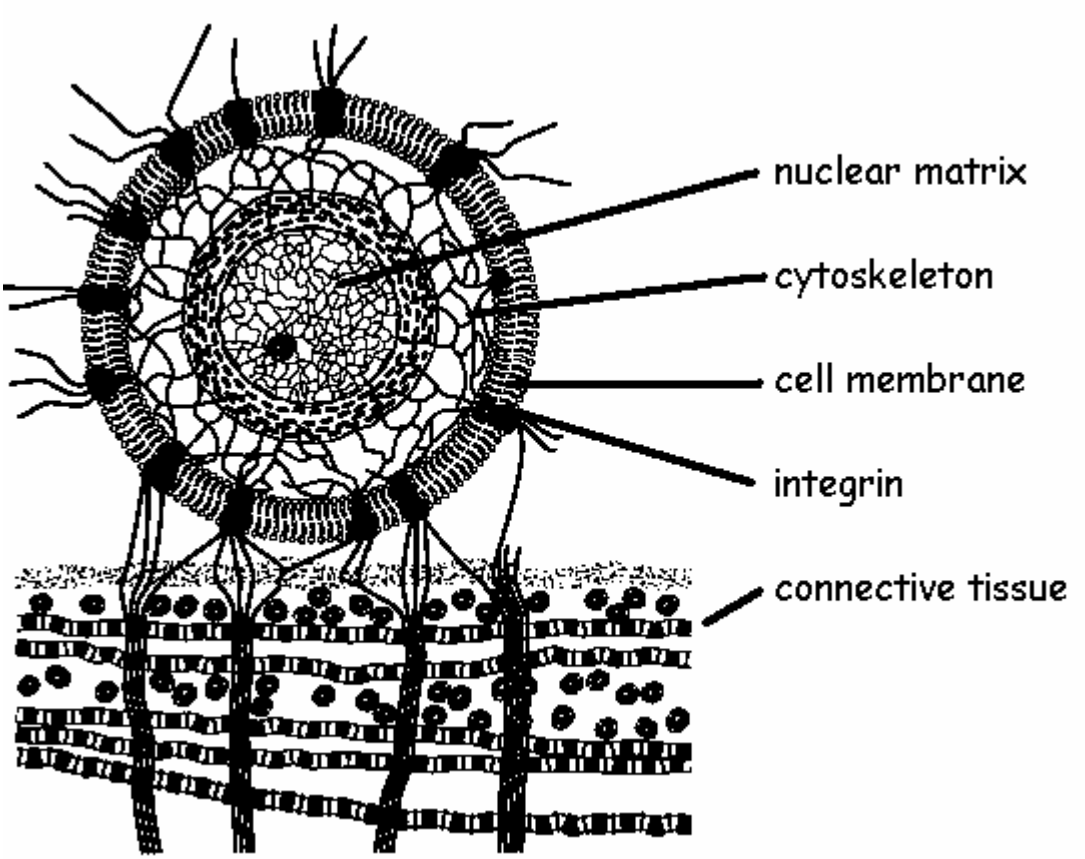

Figure 5. The living matrix. The connective tissue system, illustrated in part in Figure 4, is connected via integrin molecules in the cell surface to the cytoskeleton within each cell. This system is, in turn, connected with the nuclear matrix containing the genetic material, DNA. The entire system, consisting of the extracellular matrix, the cytoskeletons, and the nuclear matrices, is called *the living matrix*. This system extends into and communicates with every nook and cranny of the body. Redrawn from Oschman, JL, 2000. Energy Medicine: the scientific basis. Churchill Livingstone, Edinburgh, Figure 4.6, p. 66 (15).

Communication in the living matrix

Research has shown that the principle protein in the connective tissues, called collagen, is a semiconductor (16). In fact, it is a liquid crystalline semiconductor (17). Liquid crystals are highly organized materials that are intermediate between liquids and solids. One attribute of such materials is that they can be piezoelectric, that is they will generate electric fields when they are deformed by compression or stretching (18). Most, if not all, of the tissues in the body are piezoelectric semiconductors.

The importance of this for the athlete is that it explains how exercise and practice lead to the progressive adaptation of body structures (19). Specifically, electrical signals are created within the musculoskeletal system during stretching or compression of tendons, ligaments, cartilage, bones, and so on. These piezoelectric signals, and those produced during nerve conduction and muscle contraction, create a veritable "symphony" of electrical fields that are conducted through the living matrix. A particular type of movement, such as lifting a weight or stretching a tendon, will produce a characteristic pattern of electrical activity within the living matrix. It is thought that these patterns of electrical energy "inform" the cells within the musculoskeletal system of the type of activity taking place, and trigger those cells to reorganize or adapt the tissue structure to optimize the movement being practiced (19).

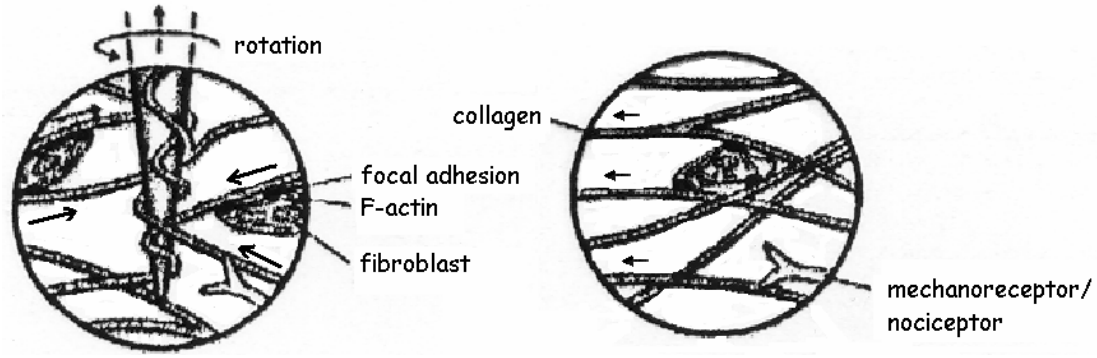

Figure 6. The phenomenon acupuncturists refer to as "needle grasp" is associated with an attachment of collagen fibers in the connective tissue to the needle as it is being rotated or pulled. The tension on the connective tissue fibers tugs on cells such as fibroblasts located in the dermis, and alters cell geometry, which, in turn, affects cellular metabolism. From Langevin and colleagues, reference 20.

Connective tissue and the acupuncture meridians

Until recently, the acupuncture meridians, known since ancient times as primary channels of communication and energy flow in the body, have been a mystery to modern science because no known anatomical structure could be correlated with them. Recent research from the University of Vermont College of Medicine has shown that connective tissue is involved in the therapeutic mechanism of acupuncture (20).

Specifically, successful acupuncture is recognized by the presence of a phenomenon known as “di qi.” There are two components to di qi. The patient experiences an aching sensation in the area of the needle, and the acupuncturist feels a sensation of the tissue contracting around the needle, creating resistance to twisting or withdrawing the needle. This later phenomenon is called “needle grasp.”

Careful research has shown that needle grasp is associated with an attachment of collagen fibers in the connective tissue to the needle as it is being rotated or pulled (20). This is illustrated in Figure 6. It is now thought that acupuncture needling transfers a mechanical signal into the connective tissue and the cells embedded within it. These signals can activate sensory nerves and can also be conducted throughout the liquid crystalline living matrix.

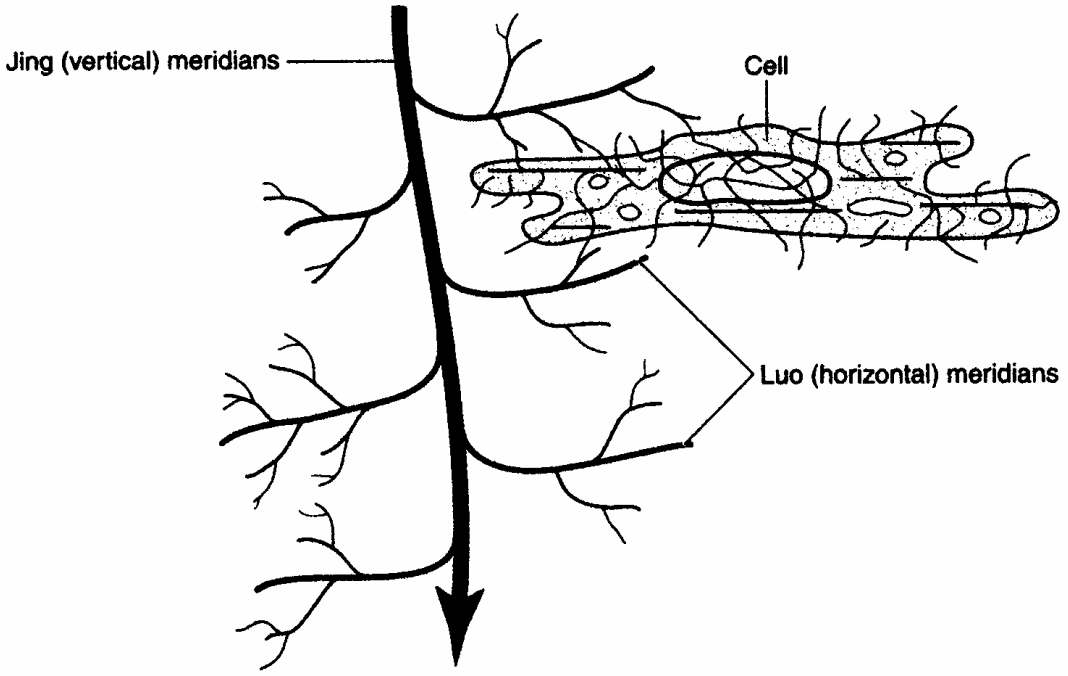

Figure 7. The acupuncture meridians consist of vertical channels, called Jing, and horizontal ones, called luo. The luo meridians branch and re-branch, and extend to and into each cell in the body. From Matsumoto and Birch, reference 21.

This discovery is important for the athlete because it suggests that the acupuncture meridian system resides within the same tissue, the connective tissue, which extends throughout the body, and upon which all movement depends. Figure 7 shows how the meridians form primary vertical and horizontal channels that branch and send extensions into all cells (21).

A noted British biophysicist (22) has described the properties of this system as follows:

Liquid crystallinity gives organisms their characteristic flexibility, exquisite sensitivity and responsiveness, thus optimizing the rapid, noiseless intercommunication that enables the organism to function as a coherent coordinated whole.

The VE-1 optimizes this entire system for energy and information flows.

Cell to cell communications and migrations

Figure 8 shows connections between two cells and the underlying connective tissue substrate. There are many kinds of communication taking place between cells. Of particular interest in relation to the VE-1 are the vibratory communications conducted through the living matrix. These communications are carried by electrons, protons, and, possibly, other subatomic particles and waves that are capable of very rapid movement through the semiconducting network (22). This system represents a very high-speed communication system capable of moving energy and information far faster than nerves can conduct impulses, and faster than chemical signals can be carried by the circulatory system (23). The actions of this high-speed system are particularly well developed in practitioners of the martial arts, and in any performance requiring rapid and coordinated movements.

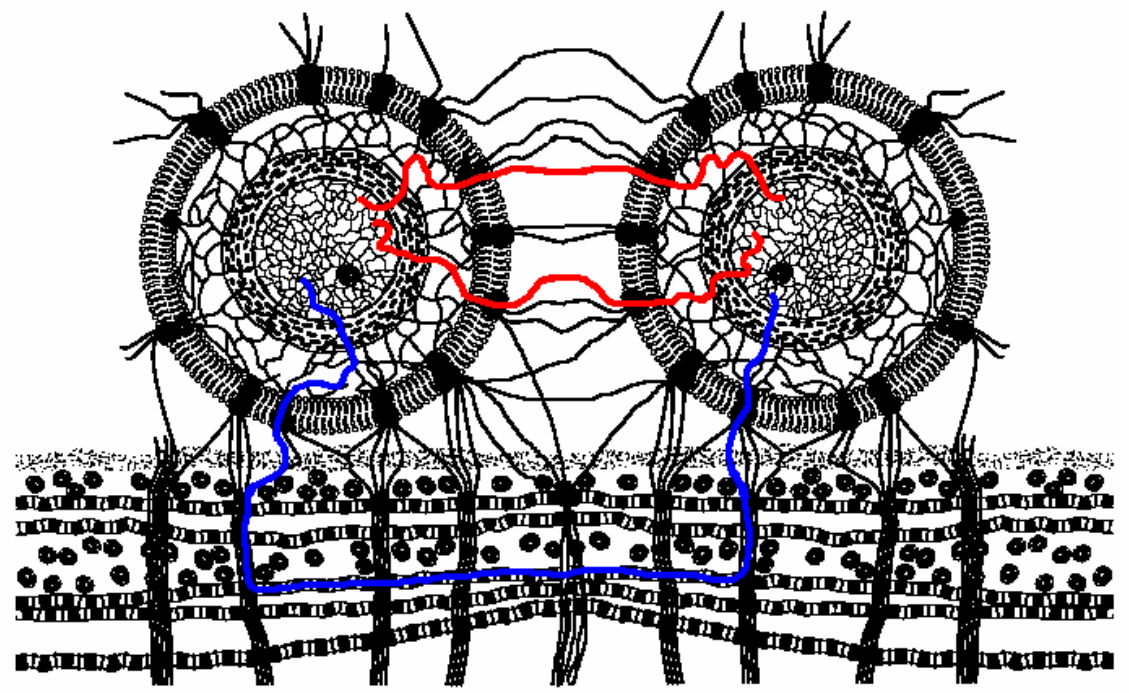

Figure 8. The interconnecting pathways between two cells. Pathways shown in red exemplify direct cell-to-cell pathways that occur in tissues composed of layers of cells. Pathway shown in blue represents a connection from one cell to the underlying matrix and thence to other cells in the body.

In addition to the signaling and energy conduction aspects of the living matrix, the fabric of the body has another important role by providing a substrate for the migration of cells

from place to place. For example, when a tissue is injured, various kinds of cells must migrate to the injury site to fight off infection, to clot the blood if necessary, and to carry out the repair and reconstruction process. And tissue re-modeling, as occurs during athletic training, involves cells moving into the appropriate places to adjust tissue structure and energetic properties according to the activity being practiced.

Obviously, if the connective tissue substrate is dense from old injuries, or if it is clogged with toxins, important cell migrations will be compromised. Tissue re-modeling will be slowed and injuries will heal slowly. Indications are that one of the effects of acupuncture needling and various hands-on therapies such as massage, Structural Integration, or Reiki is to soften the connective tissue substrate so that cell migrations can take place freely and rapidly (24). The VE-1 is compatible with all of these methods and, and can greatly enhance their effectiveness.

From Figure 8, it can be seen that there are two primary routes for high-speed electronic and protonic communications. One is directly from cell to cell via semiconduction through the integrin molecules. A second is via the integrins into the extracellular matrix that extends throughout the body, and thence to all other cells. Therefore an optimally functioning living matrix will allow for extremely rapid interconnection between every cell and every other cell in the body.

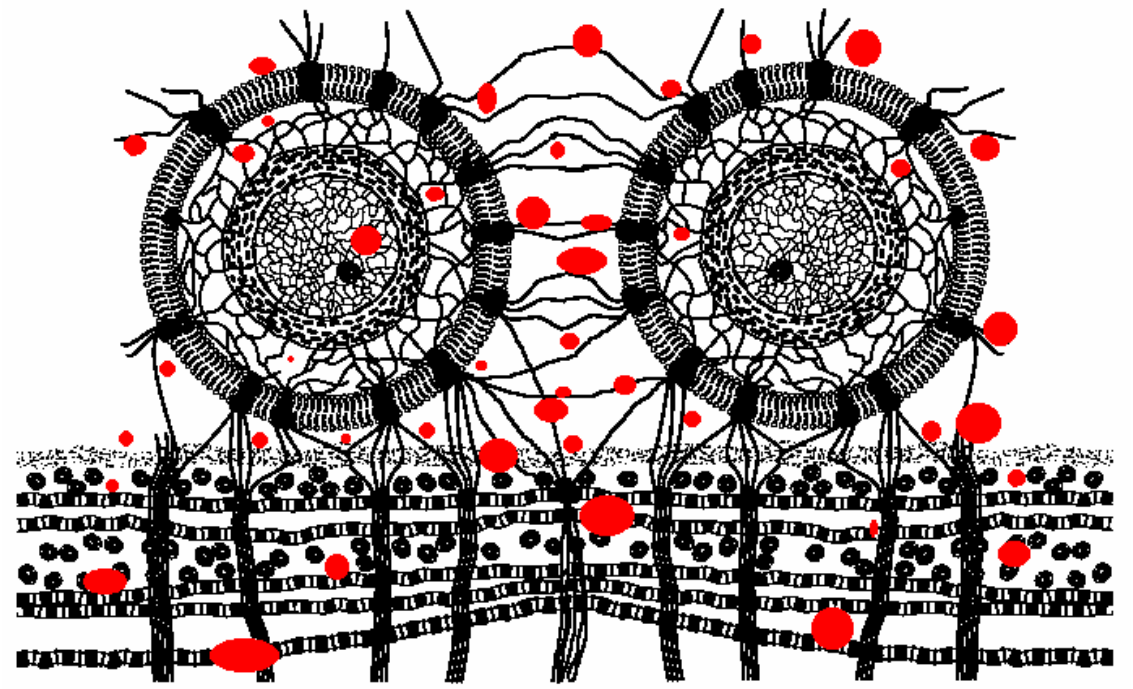

Figure 9. Trapping of toxins (shown in red) within the living matrix.

Storage of toxins in the matrix

One important aspect of the connective tissue matrix is its capacity to store toxins and thereby prevent them from entering the circulatory system and damaging organs. This is called "storage excretion." One way toxins are stored is by simple mechanical trapping in the various sponge-like cavities in the extra-cellular and cellular matrix. Another is by attraction of the toxin molecules to various electrical charges on the molecular scaffolding of the matrix (25). The trapping of toxins is illustrated in Figure 9. Some of the toxic materials that can accumulate in the matrix:

- Drugs
- Lotions
- Solvents
- Pesticides
- Viral fragments
- Mercury from dental fillings
- Detergents and other household chemicals

Toxins trapped in the living matrix compromise communications in several ways. One is by hindering the diffusion of chemical factors such as those involved in signaling cells to migrate to a place of injury or tissue re-modeling (25). Another is by compromising the migration of cells through the matrix. Finally, charges on the toxins disturb subtle electromagnetic communication systems (26). Toxins can disturb the electronic and protonic communications taking place both through the tissue fabric, and through the water layers surrounding the matrix molecules.

Regular use of the VE-1 produces a gradual release of toxins from the matrix. This process enhances cell and tissue function and physiological integration. Moreover, the fluid spaces within the connective tissue are the primary channels through which nutrients and oxygen reach cells, and through which metabolic waste products (carbon dioxide and lactic acid, for example) diffuse from the cells to the circulatory and lymphatic systems. Toxins trapped in the matrix can compromise both nourishment of cells and the removal of metabolic waste products. By removing toxins and opening these fluid spaces, use of the VE-1 has a beneficial effect on every cell in the body.

Effects of the VE-1

The VE-1 produces signals that gently vibrate all of the molecules forming the living matrix as well as any toxins that may be trapped within it. This happens because all molecules contain electrical charges that will vibrate in an oscillating electromagnetic field. The fields used by the VE-1 are very low in power and are applied in low doses. The signals are far too small to disturb normal functioning, but they are capable of gently "massaging" the molecules forming the vital communication channels just described. By using the VE-1 for a short period every other day, the effects are spread over a period of time and the beneficial changes are produced gradually with no chance of compromising any vital processes.

One effect of the vibratory signals set up by theVE-1 is to loosen toxin molecules trapped within the tissues. This can happen in three ways. One is by simply shaking toxin molecules loose from the cavities within the matrix where they are trapped, so the toxins can enter the extra-cellular fluid and be carried away by the lymphatic and circulatory systems. A second is by vibrating the various electrical bonds between the matrix molecules and the toxins, allowing the toxins to disengage and float free. A third is by gently causing components of the matrix called *gels* to temporarily dissolve (*solate*) and allow toxins to float away (27). This is illustrated in Figure 10. This is particularly important in facilitating the healing of old injuries, which tend to become dense and dehydrated. After the session with the VE-1, the matrix re-gels, but is now free of the toxic substances and the gel is more open and hydrated (28). The importance of this re-hydration cannot be over-emphasized, as it has been discovered that a small change in hydration can bring about a large change in electronic and protonic mobility (29).

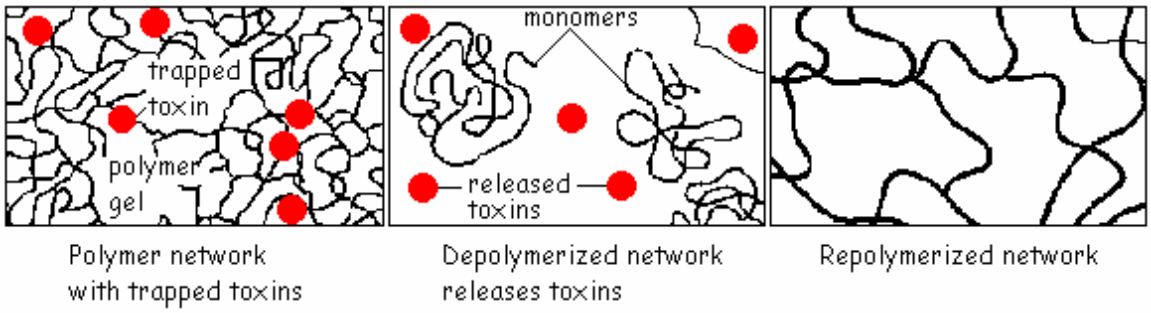

Figure 10. Proposed scheme for the effect of the VE-1 on toxins trapped in the gel phase (ground substance) of connective tissue. To the left is a dehydrated gel with trapped toxins shown in red. Drawing in the center shows that the gel has been converted into a sol phase, releasing toxins that can be carried away by the lymphatic and venous drainage. Moments later the gel re-forms, but it now more porous, open, hydrated, and free of toxic materials that have been removed by the excretory system.

The frequencies of the vibratory "massage" produced by the VE-1 correlates to important frequencies that have occurred in the Earth's atmosphere since life began. These are the frequencies produced by lightening, the sun, the geomagnetic field, the rhythmic functioning of various organs such as the heart and brain, and other natural phenomena. These are all natural frequencies. Some of the frequencies produced by the VE-1 have been demonstrated to "jump-start" the repair of a wide spectrum of tissues. (30).

The VE-1 does not produce unnatural frequencies that could potentially alter vital processes. The only side effect reported is the result of the body detoxifying so that the user may feel temporarily uncomfortable. This feeling will disappear once the user has expelled these toxins. For this reason, it is recommended that the user drink water before, during, and after using the VE-1.

Finally, each molecule, cell, tissue, and organ in the body has a particular electromagnetic signature or set of frequencies associated with optimal functioning. By providing a spectrum of natural frequencies related to the healthy state, the VE-1 can help

shift cells and tissues back to their optimal resonant frequencies. This shift is facilitated by an additional component of the VE-1 called the photonic accumulator.

Photonic accumulator

The photonic accumulator in the VE-1 has a photographic lens that collects the photonic energy around your body and treats it with a proprietary technique. The technology is a cutting edge application of a new field called quantum holography (31). If any cell or organ is unhealthy or is functioning on a sub optimal level, the bio-photons emitted by the body (32) are affected. By treating the bio-photons with the photonic accumulator the body is restored to its optimal form or "blueprint. This aspect of the functioning of theVE-1 connects the athlete with recently discovered subtle but profound quantum coherence phenomena that appear to underlay biological processes and possibly consciousness itself (33). Quantum holography is based on recent research showing that all living matter, from cells to organisms, is informationally and energetically connected internally by nonlocal quantum coherence, and externally with the larger environment, by coherent emissions.

The effects of the photonic accumulator must be experienced to be appreciated. A consistent observation is that emotions related to traumatic experiences seem to be virtually erased by the VE-1. This is important to athletes because no amount of practice and preparation can remove psychological or emotional barriers that can distract during a performance. The mechanism by which traumatic events in a person's life, and memories of those events, can limit performance, is not fully understood, but there is evidence that the whole body is involved. While further research is needed, we suspect that the photonic accumulator is re-setting living structure to a blueprint that pre-dates the various traumas that occur during one's life.

Summary: rejuvenation

From the information given above, we conclude that *rejuvenation* involves the "stirring-up" of all of the communicating fabric of the body to dislodge stored toxins, facilitate the healing of old and recent injuries, re-set cellular functioning to the optimum frequencies, and open the channels that nourish cells and remove metabolic waste products. These processes prepare the system for a remarkable quantum holographic process that re-sets the whole organism to its ideal form or "blueprint."

When molecular communications are opened and cells and tissues are "tuned" for optimal functioning, there is an improvement in motor skills, coordination, stamina, flexibility, and mental clarity. Athletes with injuries are amazed by the quick recovery experienced with the use of the VE-1. An overall increase in vitality and optimism are often reported. Common psychological factors, such as fear or inadequacy, simply seem to fade away after a few sessions on the VE-1. This has enabled athletes using the VE-1 to surpass their personal best, and to attain world records, championship performances, and gold medals.

Refer to the website of www.bioenergy.us which contains the research protocols as well as testimonials from Olympic athletes and users of the VE-1 and similar technologies.

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12. Sources of illustrations for Figure 4: The two illustrations to the left show Langer's

Lines, named after the Austrian anatomist, Carl Ritter von Eldenberg von Langer (1819-1887). From Gray H, Anatomy of the Human Body. The central illustration, of the perineural system, is from Oschman JL 2000 Energy Medicine: the scientific basis, Churchill Livingstone, Edinburgh, Figure 15.2, page 225. The vertebrae in the upper right are from Oschman JL 2000 Energy Medicine: the scientific basis, Churchill Livingstone, Edinburgh, Figure 12.1, page 168. The fiber tracts in the foot, lower right, are from Thompson D'W 1992 On growth and form. Dover Publications, New York (first published 1942), Fig. 464, page 980.

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