Reflexo-Therapy With Mechanical Skin Stimulation: Pilot Study

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Abstract

A medical device to deliver skin stimulation was developed in Russia in the early 1980s and several studies were done on the device. These studies indicated a high degree of success in the treatment of a variety of disorders. The device and method of use were based loosely on the practice of acupuncture. These, however, does not help to explain the phenomenon within Western scientific paradigm. Aside from metaphysical explanations about energy flow through the channels-meridians, there have been few theories proposed. The present paper reviews the development and the early Russian studies, as well as results of the pilot research program conducted in the Community Wholistic Health Center, Carrboro, NC. The paper then discusses two of the theories applicable to the results.

Introduction

Traditional Eastern healing methods and Western folk remedies include a number of skin stimulation techniques, the most common of which is massage and the most sophisticated is acupuncture. The "bed of nails", long favored by certain Hindu mystics, probably shares an underlying mechanism with acupuncture. A modern version of the bed of nails was invented about fifteen years ago by a lay Russian person, Ivan Kuznetzov, for his own use as a kind of self-acupuncture device. It turned out to be extremely successful in relieving and curing a large number of common ailments in Russia, in 1982, when it was being tested at The Institute of Experimental Surgery [1]. Back then, it was a handmade rubber mat which had approximately fifteen hundred stainless steel office pins in it, about 50 mm apart from each other with the sharp ends up. The hope was to eventually affect acupuncture points with some of the pins, like shooting a penny with a large number of pellets. The hope was also that the many pins not on target will not harm whatever good the right pins might do.

Russian Research Studies

Based on informal studies, five Moscow clinics gave the device positive

reviews and it was approved for use by the Department of Health. It was mass produced and distributed by a cooperative firm run by Kuznetzov and eventually could be bought in any drug store. The case files on the patients who used the device filled up several walls and the line for appointments formed well before opening. A documentary was filmed and aired over Soviet national television. At the time, no one was really interested why the method worked. The documentation covered over 5,000 treatments on over 400 patients. The studies showed highly reproducible pain relief for complicated fractures and concussions, reduction in surgical pain, reduced pain and stiffness in patients with osteochondrosis, improved respiratory function in patients with broncho-pulminary conditions, and all with no side effects. (Summaries of these research studies are included in the Appendix). Although the method achieved great success in Russia, no professional discussions were held, no articles were published, and no proposed theories behind the method were ever offered.

Recent U.S. Research Studies

Method

In the United States, a new version of Kuznetzov's device is now available under the brand name Panacea[a], it is composed of a flexible polyurethane base (9.5" x 19") with 1320 pointed pyramidal "stimulators" which provide intensive tactile stimulation when being pressed with the body weight upon the skin of the back in the supine position. Distribution of the body weight between large number of "stimulators" insures a safe procedure without penetrating the skin.

Subjects.

The study done in 1996 consisted of following up 200 subjects who used their own devices for at least two weeks. 126 of them filled out the questionnaires which were collected and analyzed. Among them, 105 treported that they used the device for various specific health problems The five most frequently reported conditions
were the following (starting with the most frequent): stress, pain, muscle spasms, mood swings and insomnia.

Results.

One or more positive effects of the device on the conditions specified by subjects were reported by 99 of the 105 participants (94%) with the above specific health problems. However, in many cases there were not enough subjects to make comclusions regarding effects of the Panacea on the specific ailments. To obtain significant number of cases, we included in the questionnaire 5 health conditions to be estimated by all the participants, including those with no particular health problems.

One of the questions of the questionnaire was the following: "Did you

experience any positive effects using the Panacea in the following categories: relaxation, pain relief, sleep quality, energy level, allergies?" Out of 126 subjects, 98% reported pain relief, 96% reported relaxation, 94% reported improvement in the quality of sleep, and 81% reported an increase in energy level. Approximatelly half of the subjects with allergy problems reported their symptoms' relief

Out 21 participants who reported no tested the method while having no particular health problems, 13 nevertheless reported one or more positive effects of the Panacea

The only adverse effect is some initial discomfort which disappears after a few treatments. In fact, one of the questions in our research questionnaire was the following: "What was your comfort level the first time you laid on the Panacea? The fifth time?" During the first use 46% felt very uncomfortable and 42% uncomfortable. However, by the fifth use, the picture has reversed: 52.5% felt very comfortable and 36.5% - comfortable (Fig.4).

Discussion

New Theories.

One of the few known Western theories on acupuncture [2, 3] belongs to a team of theoretical biologists working under Dr. Dmitri Chernavski, a professor at the Russian Academy of Sciences, Institute of Physics, in Moscow. The group approached the problem from the point of view of concept of neurocomputing [4]

Since mid-century, using a model based on real (live) neural structures, a whole new class of computers, possessing so called "artificial intelligence", has been developed -- ones that can learn, recognize objects, and correct their own mistakes. In somewhat of a paradox, the reverse logic has been used now, in order to explain the mechanisms of a live brain using the known electronic models. Thus the theory of self-diagnostic function of an organism was developed.
Many of the processes of recognizing images, including the "image" of a disease, take place at as low level of the central nervous system as the spinal cord. In the gray matter of the spinal cord, neurons are organized into what are called "Rexed laminae" and their functions are well-known. The signals from the inner organs, from the skin, muscles, etc., separately one from another, first go through the first lamina. Then the signals move through the second lamina, third one, and so on, while increasingly interacting with each other and finally reach the brain in the form of integrated sets of information about the body's state of being.

The computers that recognize objects have basically the same laminar structure and similar function of signal integration. In both cases, an omitted signal from an internal organ, or one that is not strong enough, can be compensated for in the process of multiple repetitive passing back and forth

("back propagation"), as well as by a kind of filtering through the laminae. The process is only possible if the total current of the integrated signal is powerful enough.

According to Dr. Chernavski, skin stimulation at the specific point of acupuncture,
corresponded to a particular internal organ or it's function, accomplishes the goal of
strengthening a weak or deteriorated signal from the organ. The process of integration in the Rexed laminae, in this case of information from the skin and the organ, increases the flow of "signals of illness" from an organ, or points out a body's mistake in recognizing the disorder.
It is as if you wanted to send a message to someone down the stream. Your write the message on a sheet of paper, fold the sheet in a manner of a paper boat and then face the fact that there is little or no water in the stream. Add some water, and the little boat will get there. Neither the way of adding the water nor the water itself has any effect on the content of letter sent.

Why the pairs "skin point- organ" converge in the central nervous system, is not completely clear. One of hypotheses is that it is due to rudimental memory of the process of embriogenesis, when the cells composing the skin and the organs originated from common maternal cells before the differentiation process diverge them. The phenomenon of skin projection of internal organs doubtlessly occurs and many, for example, angina sufferers experience it on practice in form of pain irradiation to the scapular or jaw skin areas. The possibility to use this circumstances has been empirically discovered by many healing schools from ancient to our days.

Once the body has the stronger, clearer information about the injury or disease, the natural healing powers of the body take over. What happens when the disease is recognized, the above theory does not explain, stating that the body has enough resources to battle the disease on its own. Conventional medicine neglects that statement, while holistic medicine is based on it.

Nevertheless, conventional medicine may be missing an opportunity in dismissing this explanation too quickly. Within the limits of the West's strict paradigm, there has been collected a large number of facts on natural ways of fighting diseases by restoring a proper balance of physiological functions. We offer to discuss one of the most universal mechanisms to restore body's balance.

It is known that a number of physical actions in excess of average intensity, can trigger the release of endorphins (Fig. 5), including but notl imited to: pain [5], stress [6], bleeding [7], acupuncture [8, 9], sex [10], positive emotions [11] , highly palatable foods [12], memorization process [13].

Pain reduction, in it's turn, is the most common result associated with the release of endorphins [14, 15, 16, 17, 18, 19]. It has been eventually

concluded, that any intense skin stimulation will cause a significant release of endorphins [20].

Another effect is the curious state the body falls into after the endorphin concentration has gone up: a number of other physiological regulators are released into the bloodstream such as growth hormone and insulin [21, 22]. Each one of those regulators changes a number of different body functions

As a result, it is not surprising that many serious diseases are linked to the abnormalities in the endorphin system including: schizophrenia [23, 24, 25], epilepsy [26], Parkinson's disease [27, 28, 29], hypertensia [30, 31], diabetes [32, 33, 34], PMS [35, 36, 37, 38], hot flashes [39], weight problems [40, 41, 42].

Thus, skin stimulation, even not necessarily as accurate as in acupuncture, but intensive enough, does at least two things:

1. Provides additional unspecific sensory input to the body's self-diagnostic center in the central nervous system thus amplifying insufficient signals from diseased internal organs.

2. Coordinates the body's functions through the cascade of physiological regulators
triggered by endorphins which in their turn are being released by reflexes from the skin.

These explanations throw new light on the results of Russian research in this area done during the 1980s and may explain the success of Kuznetzov's device.

Conclusion

We suggest that, since this type of skin stimulation has been repeatedly shown to elicit reflexes causing release of endorphins into the blood stream, most of the reported results can be explained by the mobilization of this particular type of endogenous stress- and pain-protective mechanism. We also consider important the local blood flow increase as well as the involvement of dozens of acupoints activated during the procedure. In the most used position of the Panacea upon the upper- to lower back, the acupoints involved can be expected to provide the following effects:

- Strengthening the liver, spleen and kidney
- Alleviating headaches, fatigue,depression and insomnia
- Easing spinal problems, sciatica, muscle spasms and cramps
- Activation the immune system
- Relief of flu, cold and asthma
- Regulation of digestion and elimination
- Improvement of conditions of cystitis, diarrhea, hemorrhoids, PMS and

complicated periods.

We regard this study as a pilot one however promising. The Community Wholistic Health Center is in process of collecting data on specific health problems that can benefit from the natural and free of adverse effects method of reflexo-therapy with mechanical skin stimulation.

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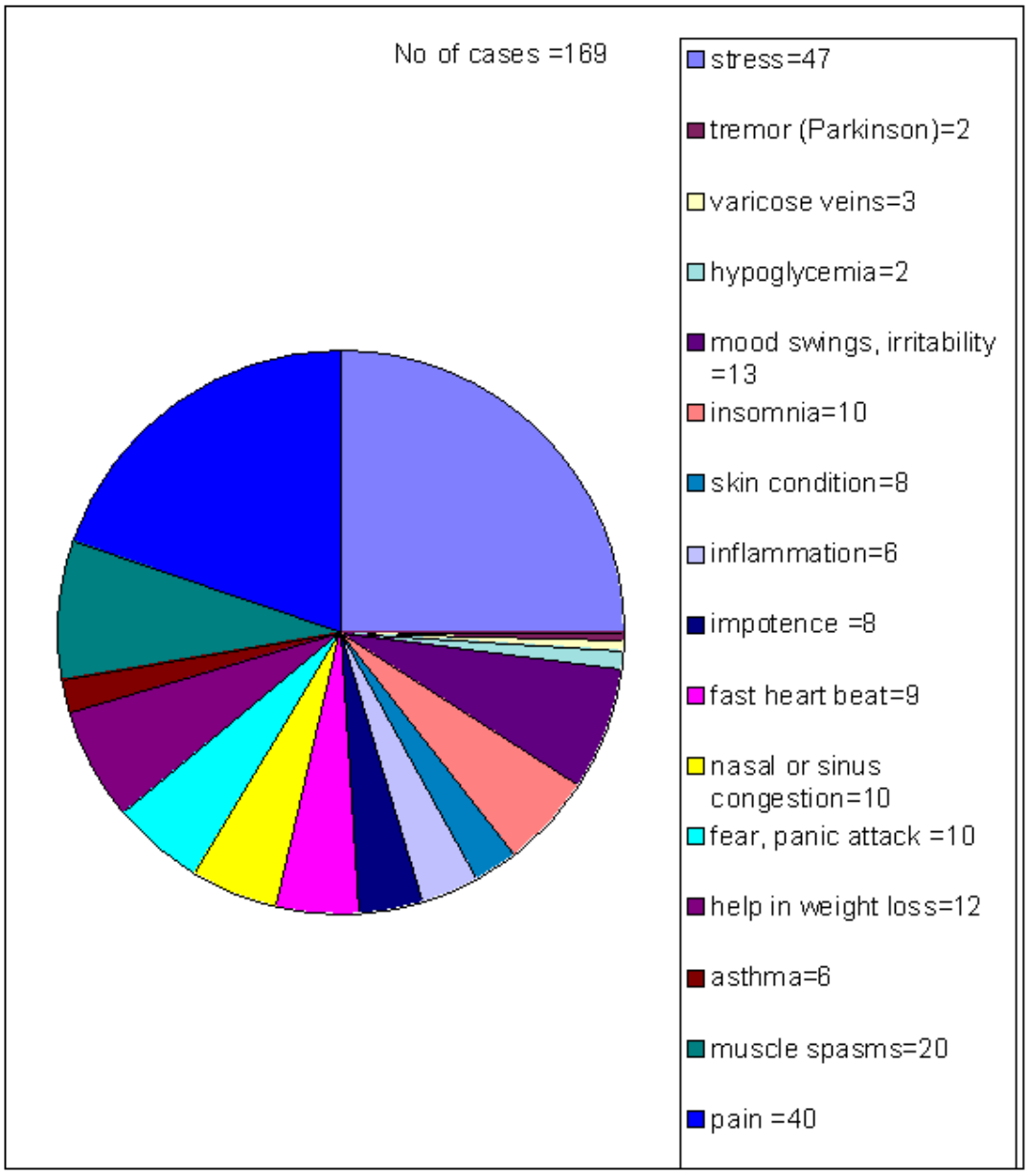
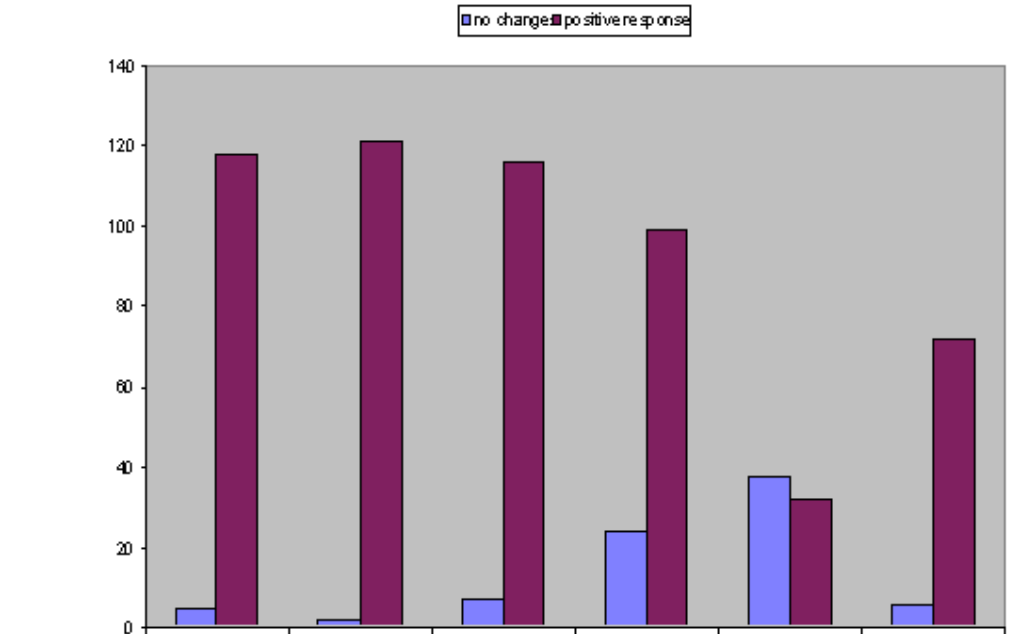
Pilot Study

In 1995, I came to work with the Community Holistic Health Center at Carrboro, NC (later, the Center moved to Hillsborough.) At that time, the Center's board of directors was about making its strategic development plans and I suggested a research program on Reflexo-therapy. After consulting a lawyer and getting information on human subjects rules from the University of North Carolina, Chapel Hill, and after practically all board members and stuff tried and loved the applicator, the project was accepted and in 1997 we had our pilot study completed. We followed up 200 of my patients who used the Applicator and asked them to fill out our simple questionnaire. The amazingly many of them, 126, answered our questions. The five most frequently reported reasons for using the Applicator were stress, pain, muscle spasms, mood swings and insomnia. Overall, we had an astonishing spectrum of reasons why people were using the Applicator: lack of energy, mood swings, insomnia, impotence, asthma, varicose veins, hypoglycemia, skin condition, inflammation, weight problem, fast heart beat, nasal or sinus congestion, fear or panic attack, allergies.

Out of our 126 subjects, 98% reported pain relief, 96% reported relaxation, 94% improvement in the quality of sleep, and 81% reported an increase in energy level. Approximately half of the subjects with allergy problems reported their symptoms' relief. Among those who tested the method while having no particular health problems, more than a half nevertheless reported one or more positive effects of the Applicator. On the next chart, the bars represent the number of people reported positive effects (purple) or absence of effects (blue) after 3 weeks of using the device (left to right) for: • Relaxation • Pain relief • Sleep quality • Energy level


No of cases =169
stress=47
tremor (Parkinson)=2
varicose veins=3
hypoglycemia=2
mood swings, irritability =13
insomnia=10
skin condition=8
inflammation=6
impotence =8
fast heart beat=9
nasal or sinus congestion=10
fear, panic attack =10
help in weight loss=12
asthma=6
muscle spasms=20
pain =40

General Effects After Two Weeks Of Using the Panacea. N=12



	Relaxation	Pain relief	Sleep quality	Energy level	Allergies	Other effects
no changes	5	2	7	24	38	6
positive response	118	121	116	99	32	72