E.M.O.S.T.

THE

ELECTRO-MAGNETIC OWN SIGNAL THERAPY

presented by

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ELECTROMAGNETIC OWN SIGNAL TREATMENT

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PROLOGUE

The body refreshes itself every day: you go to bed tired in the evening, and then you get up in the morning ”recovered”, IE even from the most exhausted state you get much better by "something" while energy was not taken. How does it happens? We deal with this neuro-vegetative process.

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If it seems that traditional and alternative methods are inefficient for healing, and even the natural healing procedures and dietary supplements fail, you should pay attention to the initial phase of a natural regeneration, your self-healing ability, or the lack thereof.

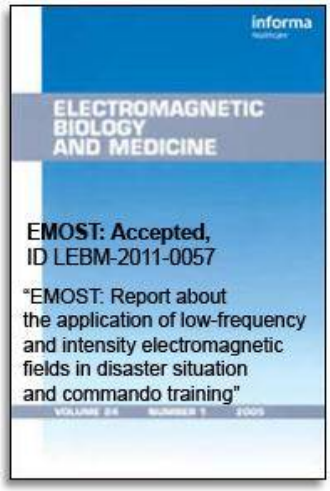
Several studies showed that the extremely low frequency and electromagnetic fields affect the passing of the neuronal action potential and can mimic the effects of the synaptic neurotransmitters. Although the extremely low frequency and electromagnetic fields can only create micro-volt size changes in the neuronal membrane potential, as a result of the signal mounting processes this can significantly influence the passing of the physiological action potential.

The computer-based method we apply in BioLabor, which regulates the patient’s own control processes, was developed in house. It has helped over forty thousand people over a five-year period. It is based on natural self-regeneration, the improvement of the body's self-healing ability through cellular electro chemical balancing.

We use the human body's own, natural, electro- and electromagnetic impulses (similarly to ECG and EEG signals) which belong to the person’s various biological processes. Our unique signal processing method is able to keep up with the pace of biological events, and instead randomly selecting certain moments, it can parallel and continually refine the body's self-regulation.

The Electromagnetic-Own-Signal-Treatment (the EMOST™ method) indicates the systematic diversion (extra-sense detection) and thematic recirculation of extremely low intensity, electric- and electromagnetic radiation that is based on the recorded natural, non-linear bioelectric and bio-electromagnetic signals (may potentials) of subjects. It influences the natural self-checking processes (regulation/adaptation) and the balance control of the electro-chemical processes (modulation of free radicals and antioxidants, redox processes as well as neurotransmission, and potentials/action potentials status) via the electro-chemical processes of the impulses and cellular receptors and free nerve endings. The detected non-linear own signals are processed in analog manner, then selected and reflected on the skin's surface. The state-of-the-arts EMOST method helps adjust and regulate directly the basic physiological flows of the body, organs and cells.

The EMOST™ method can potentiate the cellular metabolism, detection and immune processes in a natural way through the electric- and electromagnetic signals coming from the body's own range. By doing that it helps the biochemical homeostasis to recover, and helps for the neurovegetative system in signal transmission and signal recognising.



EMOST: Report about the application of low-frequency and intensity electromagnetic fields in disaster situation and commando training

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Running title: **Electromagnetic treatment in disaster and commando training**

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Abstract

Recently, we published our results (Bókkon et al. 2011 Electromagn Biol Med.) regarding the effectiveness of the EMOST (Electro-Magnetic-Own-Signal-Treatment) method for the reduction of phantom limb pain under clinical circumstances. However, EMOST treatments not only significantly reduced phantom pain, but that most of the patients also reported about additional benefits such as improvement of their sleep and mood quality after treatments. Here we report some unusual applications of EMOST method under special situations. That is, we report about our effective EMOST treatments of humans under catastrophic conditions and commando training course. This article points out that it is reasonable to apply biophysical electromagnetic management under unique circumstances. We also report some preliminary experiments on twelve members of our BioLabor regarding the effectiveness of single EMOST treatment on some serum parameters and electrocardiogram.

Keywords: EMOST treatments, Catastrophic conditions, Commando training

Introduction

To the best of our knowledge, the treatment of humans by low-frequency and intensity electromagnetic fields under special situations has never been reported before. In this article, we report on the application of our EMOST method (Electro-Magnetic-Own-Signal-Treatment) in disaster situation and commando training. The goal of this paper is to demonstrate the non ionizing biophysical electromagnetic management under real-life and unique conditions and not the presentation of clinical or controlled trials.

Health-promoting effects of low-frequency and intensity electromagnetic fields

While the health-promoting outcomes of low-frequency and intensity electromagnetic fields (LFI-EMFs) can be divisive, numerous experiments suggested that LFI-EMFs are able to initiate different healing processes, such as induction of analgesia, acceleration of bone fracture processes and wound healing (re-epithelialization), antiinflammatory effects, decrease of fatigue and depression symptoms, improvement of multiple sclerosis, fibromyalgia, and chronic pulmonary disease, improvement of cardiovascular parameters, improvement of sleep and psychiatric disorders, etc. (Baldi et al., 2007; Barzelai et al., 2009; Mach and Persinger, 2009; Mancuso et al., 2007; Nishimura et al., 2011; Sandyk, 1997; Ghione et al., 2005; Kumar et al., 2005; Lappin et al., 2003; Satter Syed et al., 1999; Selvam et al., 2007; Patruno et al., 2010; Sutbeyaz et al., 2009; Zhang et al., 2007; Tsang et al., 2009; Cvetkovic and Cosic, 2009).

The contradictions of LFI-EMFs on health-promoting effects are due to several factors, among them: the lack of standardized experimental circumstances; the unsystematic application of artificial LFI-EMF signals; and furthermore the cell type-specific redox status can also be responsible for the effects of electromagnetic expositions (Simkó, 2007).

Too long expositions of LFI-EMF treatments are also extremely problematic. During LFI-EMF experiments and treatments, LFI-EMF radiations with a short-term exposition (less than 45 min) can facilitate the immune system and cellular processes [*](for example, through redox activation processes), but a long-term or continuous exposition to LFI-EMFs causes a decline in cytoprotection and can shift the redox and calcium homeostasis of cells (Di Carlo et al., 2002; Regoli et al., 2005).

[*]LFI-EMF exposition → stimulation of cellular membrane NADPH oxidase activity → superoxide redical generation $O2^{\cdot-}$ → increased activity of calcium channels Ca^{2+} and lipoxygenases → start of arachidonsav cascade and lipid peroxidation processes → expansion of signaling pathways in cells.

EMOST system

Our EMOST medical device can detect and scene non-linear, bioelectric and bioelectromagnetic signals of the patient (Bókkon et al., 2010, 2011a, 2011b). The collected signals from patients' skin are processed by preprogrammed EMOST device (Fig. 1). The patients are treated by preprogrammed signals of EMOST device (frequencies are in the range of 1 Hz - 1 MHz; intensity range between 0.1-10 micro Teslas, via very special input/output flat electrodes). A particular feature of our EMOST method - compared to many

electromagnetic equipments - is that the patient's own bioelectromagnetic signals, which are detected from skin are processed via analogue manner (non-digitalized) inside the EMOST device. This signals are transmitted back via a flat electrode radiator through different band/signal combinations, with some amplification (-20dB- +60dB), to the skin's surface on the opposite side and extended by the higher range sounds of the signal. The special analogous signal process of EMOST device makes it possible that the biophysical information content of detected and back-transmitted electromagnetic signal is much larger than in digitized methods.

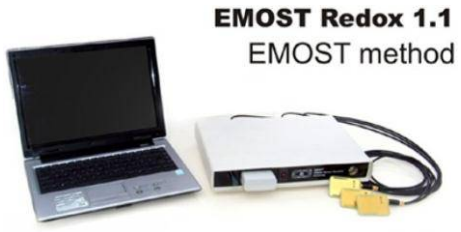

FIGURE 1 EMOST Redox 1.1 Medical Device (Certificate: HU11/6192) controlled by a personal computer.

Some possible effects of LFI-EMFs

Many possible mechanisms of various classical and quantum models have been suggested to elucidate the influence of LFI-EMFs in living systems (Binhi, 1999; Bókkon and Salari, 2010). A growing body of evidence suggested that several effects of LFI-EMFs therapies can be elucidated (or connected) by redox regulation and membrane-bound receptor mechanisms (Bauréus et al., 2003; Foster, 2003; Mathie et al., 2003). In addition, many experiments have revealed that reactive oxygen and nitrogen species as well as their derivatives act as essential signals in intracellular and intercellular communication (Dröge, 2002; Bókkon and Antal, 2011; Feissner et al., 2009; Kishida and Klann, 2007; Massaad and Klann, 2011; Powers et al., 2011; Valko et al., 2007; Zhang and Gutterman, 2007). The effect of LFI-EMFs on cell membranes and membrane-bound receptors can stimulate Ca2+-related pathways and free radical and redox-regulated processes. Thus, some of the fundamental effects of the EMOST treatment may be achieved via the redox balance of the body. It is likely that EMOST method can convey the detected and changed electromagnetic patterns of defective cells for surrounding and other cells, which facilitates intercellular communication via redox sensitive biochemical processes, and help restoration of homeostasis.

Biophysical therapeutic opportunities by LFI-EMF

Although modern pharmacology has made considerable progress in the medication of various diseases, we should also recognize that in many cases pharmacology treatments could be ineffective. In these cases, the biophysical LFI-EMF methods may offer some additional opportunities, because in various diseases, living cells do not only show altered biochemical processes but also generate altered non-linear bioelectric and bioelectromagnetic signals. Since each patient has a unique description of his/her own particular diseases, application of bioelectromagnetic own signals (EMOST) of patients for therapeutic applications may be effective especially compared to the diverse, artificial electromagnetic signals.

EMOST: phantom pain, sleep and mood quality

Recently, we presented our results regarding the effectiveness of the EMOST treatment (for six sessions) and the reduction of phantom limb pain under clinical circumstances (Bókkon et al., 2010, 2011a, 2011b). The EMOST method not only significantly reduced phantom pain, but also revealed additional benefits at most of the patients after expositions, such as improvement of their sleep and mood quality (Fig. 2).

We briefly mention here that we have established contact one year after our clinical EMOST experiments with those who took part in our research. However, there was no any further amputation in the EMOST treated patients during this year, and exposed patients reported a better general healthy states compared to sham exposed (control group). Pain is a key issue among veterans and members of the military due to increased survival rates from devastating injuries, including phantom limb pain after amputations (Ebrahimzadeh and Hariri, 2009; Wartan et a., 1997).

Since in many cases, various phantom pains can be disabling and can lead to a lifelong struggle with chronic pain, our EMOST method may offer a new possibility for the reduction of individual phantom pains.

FIGURE 2 Treatment of amputees by EMOST in the clinic.

Stress responses

Task stressors are a common problem in police officers, soldiers, veterans, as well as in special commandos (Carlier et al., 2000; Renck et al., 2002; Miller, 2011). The exposure to diverse violent situations, witnessing distressing events and seeing victims are some of the task related stressors. These task stress induced symptoms can range from mild to severe.

Traumatic stress experiences often produce peritraumatic stress responses during and immediatelly after effects of trauma and in subsequent acute and posttraumatic stress responses in stress exposed subjects. However, the perception of stress is individual dependent. What is stressful to **X** person may not cause stress in **Y** person, because it depends on the person's previous experiences, emotional and mental states.

Sleep disturbances and interpersonal problems are highly prevalent in military and police subjects with various scales of stress disorders that are associated with substantial co-morbidities and increased healthcare risks (Capaldi et al., 2011). PTSD symptoms may include nightmares, disturbing thoughts, re-experiencing phenomena, being socially detached from family and friends, hyper-arousal (such as feeling angry, irritable), etc.

Several evidences indicated that traumatic stress exposures and PTSD are common anxiety disorders in military and police subjects as well as in normal populations and can be associated with cardiovascular diseases, chronic fatigue syndrome, musculoskeletal disorders, etc. (Boscarino, 2004). People with PTSD are more likely to have hypertension, obesity, hyperlipidemia, and cardiovascular disease.

The biological processes that account for the observed associations between PTSD and cardiovascular disease may relate to dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and for continual over-stimulation of the autonomic nervous system that can promote the increases in blood pressure and lipid levels (Bedi and Arora, 2007).

Immune function changes in PTSD subjects may also influence circulating levels of interleukin-6 (IL-6), IL-1, tumor necrosis factor (TNF), and C-reactive protein (CRP) (Rohleder and Karl, 2006). However, inflammatory mediators such as TNF, CRP, and IL-6, can stimulate atherosclerosis. Interactions among the immune and neuroendocrine systems may partly account for associations between PTSD and chronic disease outcomes.

Psychological and medical treatments for PTSD include group or individual psychotherapy (for example, cognitive-behavioral therapy) and pharmacotherapy such as the use of selective serotonin reuptake inhibitors (Spoont et al., 2010).

EMOST treatment of police commandos during training exercise

In 2011, we performed some EMOST treatments of twelve Hungarian police commandos (elite forces) during their hard training exercise. During commando trainings, police officers had been exposed to very difficult physical and psychological conditions for tree weeks. We provided our treatments (with official permission) on three consecutive days in the last week of exercising. The commandos came and went for shooting practice, physical training etc., and when they have a little pause, we performed EMOST treatments. As the Figure 3 shows, commandos were lying on the hard tables (sometimes with weapons) during EMOST treatments. So, the situation was very realistic.

The commandos were asked to rate their physical and psychological conditions on the 0–10 verbal numerical rating scale prior to the treatment and after the treatment during each three days. We also measured their cardiovascular risks prior to the treatments and after the treatments, and studied the speed of their reflexes via a simple task. Following the trend of the three treatments, after the third treatment, the studied parameters clearly showed a downward trend in cardiovascular risks, an improved physical and psychological conditions as well as a slightly increased reflex.

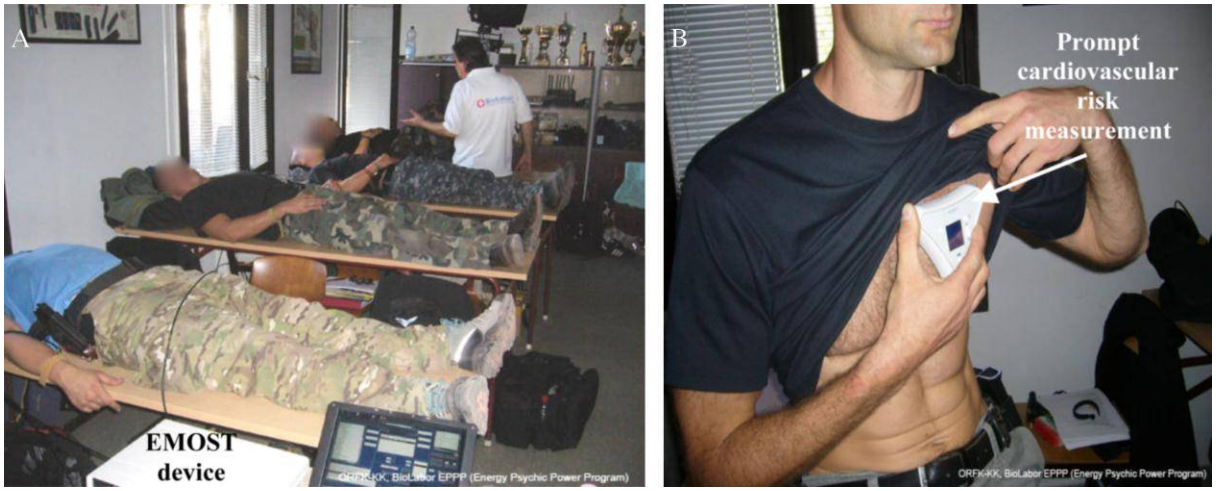

FIGURE 3 (A) Commandos were lying on the hard tables during EMOST treatments. (B) Prompt measure of cardiovascular risk.

EMOST treatments during flood disaster in Felsőzsolca, Hungary

Felsőzsolca is a small town in North-East of Hungary. In June, 2010 the biggest flood hit Felsőzsolca. Out of a total of 2200, about 1800 houses were damaged, and over 200 houses collapsed by the river Sajó. In addition to local residents, hundreds of soldiers, firefighters and

volunteers helped to save lives. The local government leaders as well as military and firefighter commanders continuously managed the rescue processes. Many managers had no sleep in 48 hours, and several residents suffered PTSD. Some voluntary psychologists also tried to reduce the extreme psychological stress caused by the flood.

Since our several years of EMOST application and our experiments indicated that EMOST can produce prompt effect to reduce stress and fatigue levels and to improve sleep and mood quality in patients, our BioLabor group also took part as volunteers in Felsőzsolca rescue-actions by EMOST treatments of several commanders and local residents that were exhausted at the border (see Figure 4 with our photos). We have treated about 80 managers and residents by some of special EMOST regeneration program. Most of the treated subjects rendered benefit improvements after 40 min treatment reported their reduced stress and fatigue levels and improved mood quality and concentration ability.

After traumatic stress (that frequently result in peri-traumatic stress), the sooner we use a variety of therapies, the smaller the chance to develop acute or posttraumatic stress state. However, biophysical LFI-EMF treatments may offer a special and prompt help in many particular situations.

FIGURE 4 Our photos have been taken in Felsőzsolca. (A) EMOST treatments of exhausted and stressed local residents, soldiers, firefighters. (B) Our car and local residents in a flooded street in Felsőzsolca, on June. 2010. (C) Residents used a boat to cross a flooded street in Felsőzsolca.

Preliminary experiments: Single EMOST treatment effect on electrocardiogram and the serum concentration of urea, albumin, cortisol, chloride, CPK, TSH, and CRP

We performed some preliminary experiments on twelve members of our BioLabor regarding the effectiveness of single EMOST treatment on some serum parameters and electrocardiogram (ECG). ECG results did not show statistic significant improvement after single EMOST treatment. In contrast, some serum factor such as uric acid, albumin, cortisol, chloride, Creatine phosphokinase (CPK), Thyroid stimulating hormone (TSH), C-reactive protein (CRP) indicated some remarkable changes following one treatment.

Cortisol, TSH, CRP, and CPK serum concentrations were reduced in the most of us. The albumin concentration usually showed a slight decrease and the uric acid concentration increased in almost all cases. Chloride level of serum showed a slight increase in almost every case. Of course, these few preface experiments have no great importance, but indicate EMOST treatment may reduce stress factors and affect on the redox/free radical processes as numerous studies reported regarding to the effect of low-frequency and intensity electromagnetic fields.

For example, cortisol levels were decreased in most of the members of our BioLabor after one EMOST treatment. Cortisol is a (glucocorticoid) steroid hormone that produced by the adrenal cortex in response to stress(Inslicht et al., 2011). Its major functions are, among them, to increase blood sugar through gluconeogenesis and suppress the immune system, but recent studies revealed that glucocorticoids (cortisol) have both stimulatory and suppressive effects on immune responses that are dependent on the GC concentration (Yeager et al., 2008).

Uric acid concentration increased in almost all cases after single EMOST treatment. However, uric acid is strong reducing agents (electron donors) and potent antioxidants (Warning, 2002). In humans, about the half the antioxidant ability of blood plasma comes from uric acid (Maxwell et al., 1997).

Chloride level also showed a slight increase in almost every case. Chloride is a prominent negatively charged ion in the blood, where it represents about 70% of the body's total negative ion content. However, chloride level has essential role of blood pH value that can influence pH-dependent redox/free radical processes. It seems that EMOST treatments may transiently potentiate functional redox processes.

However, we have started a large-scale, controlled testing of EMOST treatments (with forty subjects and with sham exposed controls) regarding its effectiveness on serum parameters and electrocardiogram. We hope that we can report the results in the near future.

Discussion and Conclusions

We have to stress again that our goal was not the presentation of clinical or controlled trials, but show the non ionizing electromagnetic management under real-life and also in unique conditions.

One may argue that the presented beneficial effects of our EMOST treatments were due to the placebo effect. However, it is unlikely that EMOST treatments could produce placebo effect on eighty subjects under flood disaster. In addition, during many years of EMOST application, we also effectively treated hundreds of children and babies with diverse health problems. It is also hardly possible that EMOST treatments could make placebo effects on babies. Furthermore, our recently published results on the effectiveness of the EMOST in reduction of phantom limb pain as well as improvement of the quality of sleep and mood in subjects under clinical circumstances also support the real effectiveness of EMOST.

Because the EMOST method based on non-linear, bioelectric and bioelectromagnetic signals of patients, it offers tailor-made opportunities. In addition, it is not realistic to apply a large number of psychologists under unexpected events and disaster conditions.

The presented EMOST application (Electro-Magnetic-Own-Signal-Treatment) under disaster conditions and commando training, may point out a further possible way of healing therapies in addition to the modern pharmacologic and psychological methods. We should also consider that the sooner we use a variety of therapies, the smaller the chance to develop acute or posttraumatic stress status after unexpected and disaster situations.

The aforementioned few preliminary experiments on members of our BioLabor regarding the efficiency of single EMOST treatment on serum parameters and electrocardiogram indicated that it is worthy to perform a large-scale, controlled testing that we have started.

Besides, not only for stress management should be considered, but also improve mental and physical states, concentration, cognitive and situation analysis abilities of exhausted troops and policemen after unexpected and catastrophic events.

In summary, we should consider biophysical electromagnetic managements as a further possible way of healing therapies in addition to the pharmacologic and psychological methods, especially under unique, unexpected and disaster situations.

CONFLICT OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content.

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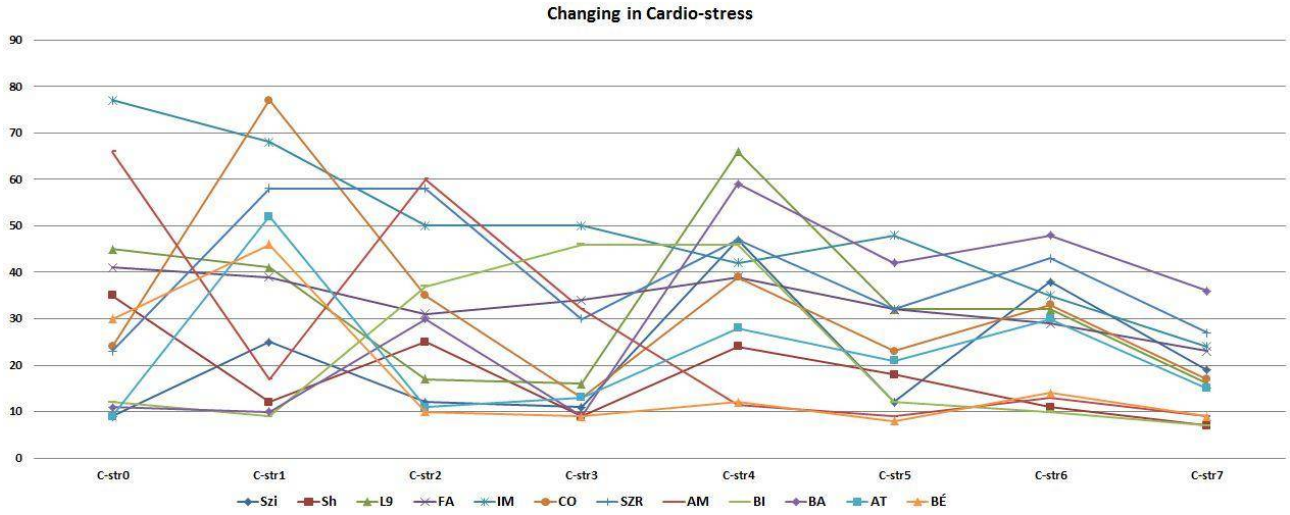
Changing in Cardio-stress
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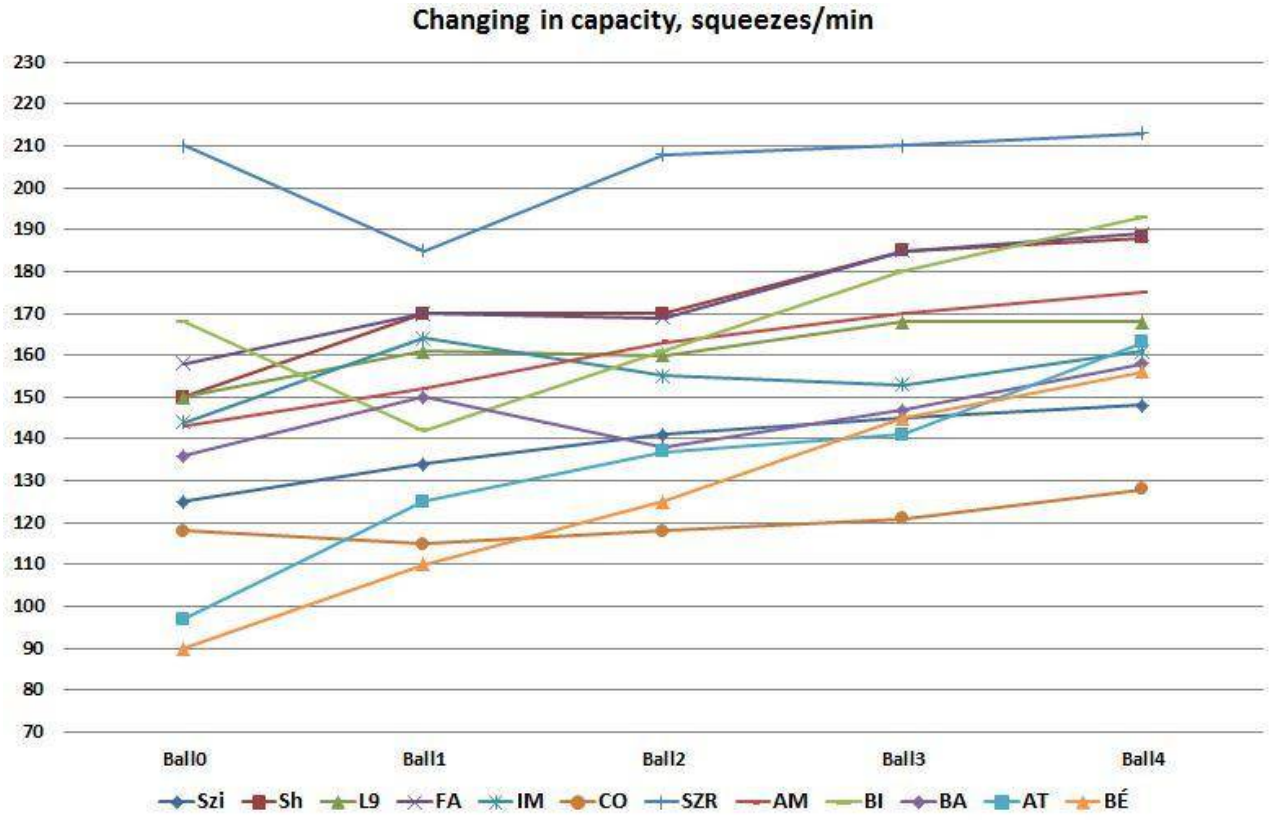
Changing in capacity, squeezes/min
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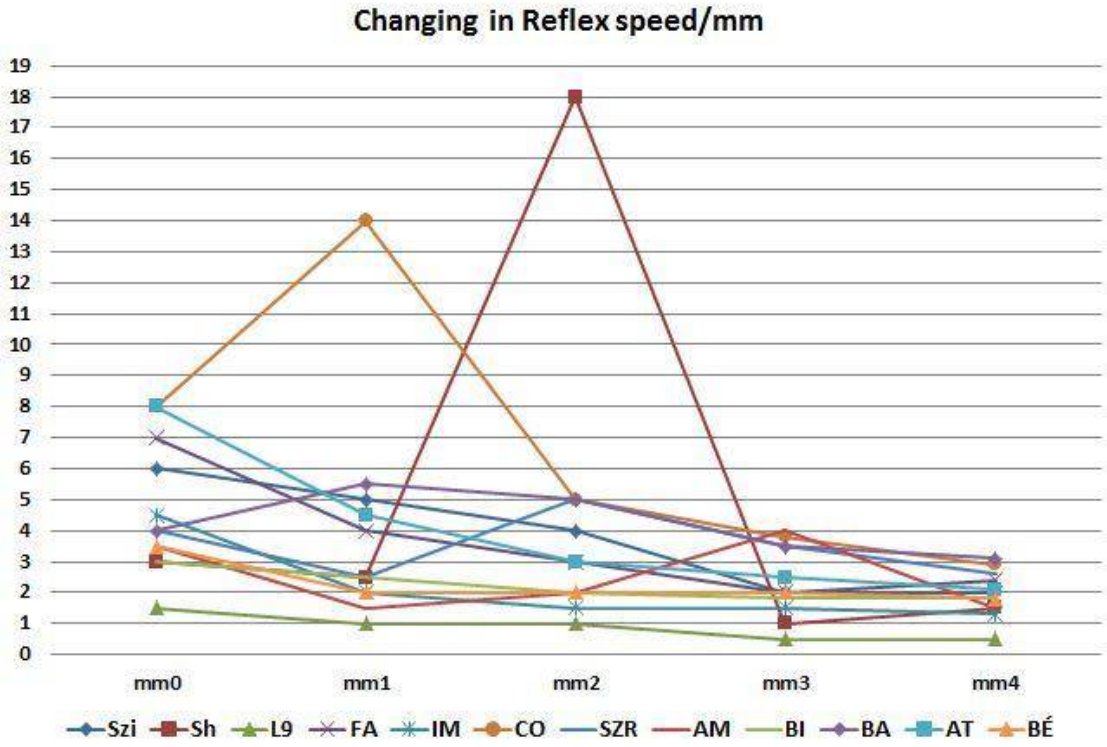
Changing in Reflex speed/mm
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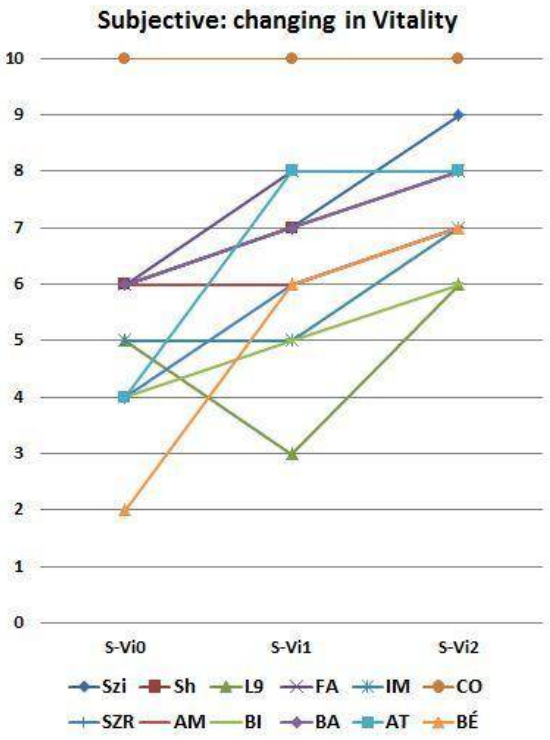
Subjective: changing in Vitality
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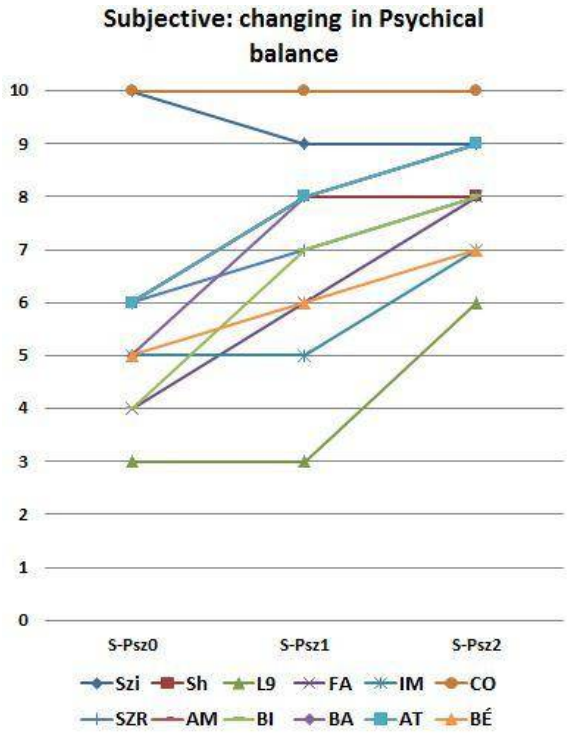
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PRELIMINARY EXPERIMENTS:
Single EMOST treatment effect on electrocardiogram and the serum concentration of urea, albumin, cortisol, chloride, CPK, TSH, and CRP

UNDER REVIEW

We performed some preliminary experiments on twelve members of our BioLabor regarding the effectiveness of single EMOST treatment on some serum parameters and electrocardiogram (ECG). ECG results did not show statistic significant improvement after single EMOST treatment. In contrast, some serum factor such as uric acid, albumin, cortisol, chloride, Creatine phosphokinase (CPK), Thyroid stimulating hormone (TSH), C-reactive protein (CRP) indicated some remarkable changes following one treatment.

Cortisol, TSH, CRP, and CPK serum concentrations were reduced in the most of us. The albumin concentration usually showed a slight decrease and the uric acid concentration increased in almost all cases. Chloride level of serum showed a slight increase in almost every case. Of course, these few preface experiments have no great importance, but indicate EMOST treatment may reduce stress factors and affect on the redox/free radical processes as numerous studies reported regarding to the effect of low-frequency and intensity electromagnetic fields.

For example, cortisol levels were decreased in most of the members of our BioLabor after one EMOST treatment. Cortisol is a (glucocorticoid) steroid hormone that produced by the adrenal cortex in response to stress (Inslicht et al., 2011). Its major functions are, among them, to increase blood sugar through gluconeogenesis and suppress the immune system, but recent studies revealed that glucocorticoids (cortisol) have both stimulatory and suppressive effects on immune responses that are dependent on the GC concentration (Yeager et al., 2008).

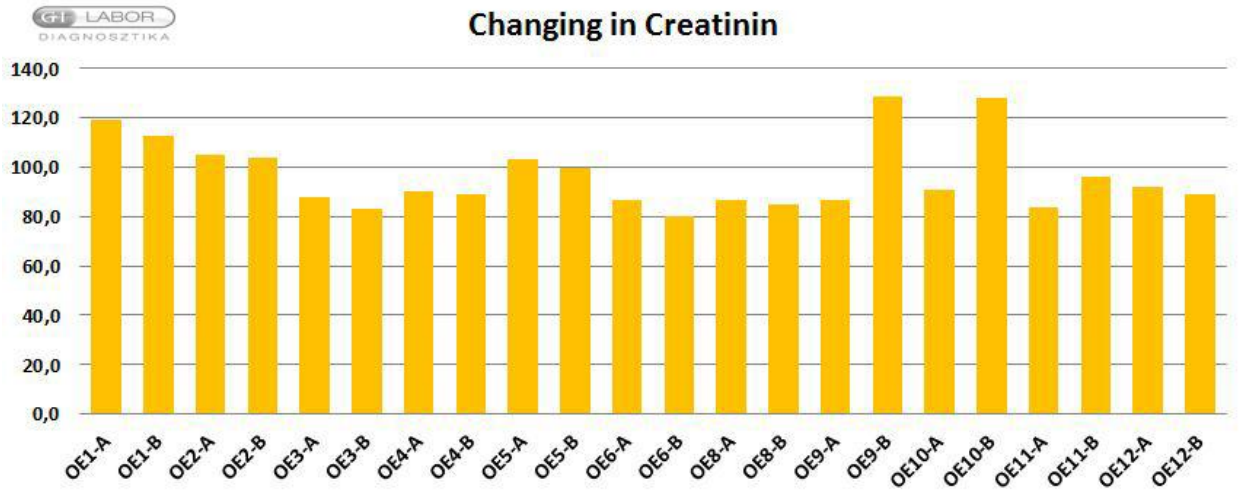
Uric acid concentration increased in almost all cases after single EMOST treatment. However, uric acid is strong reducing agents (electron donors) and potent antioxidants (Warning, 2002). In humans, about the half the antioxidant ability of blood plasma comes from uric acid (Maxwell et al., 1997).

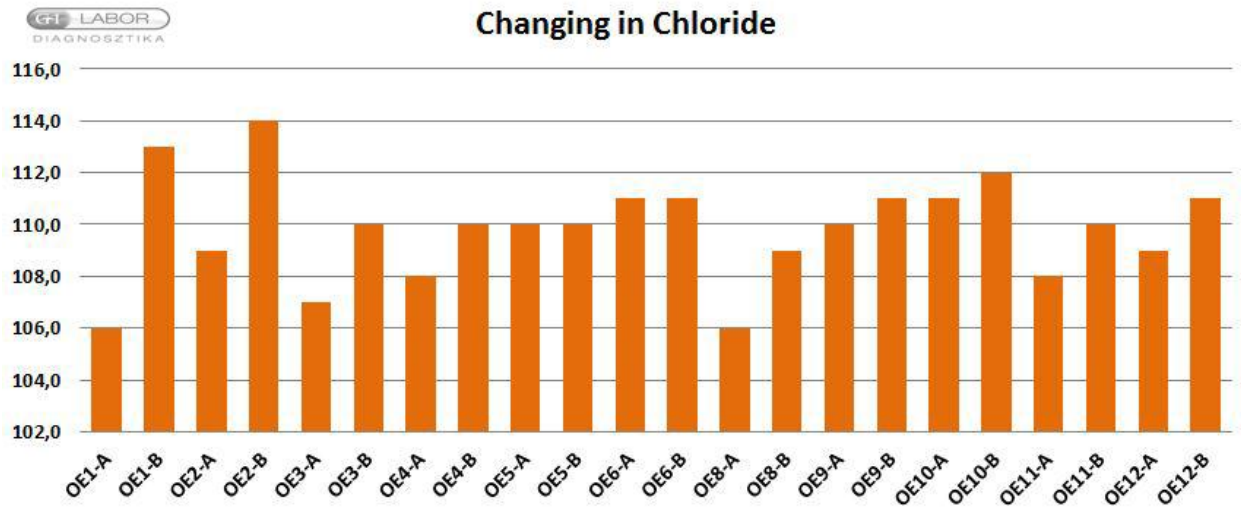
Chloride level also showed a slight increase in almost every case. Chloride is a prominent negatively charged ion in the blood, where it represents about 70% of the body's total negative ion content. However, chloride level has essential role of blood pH value that can influence pH-dependent redox/free radical processes. It seems that EMOST treatments may transiently potentiate functional redox processes.

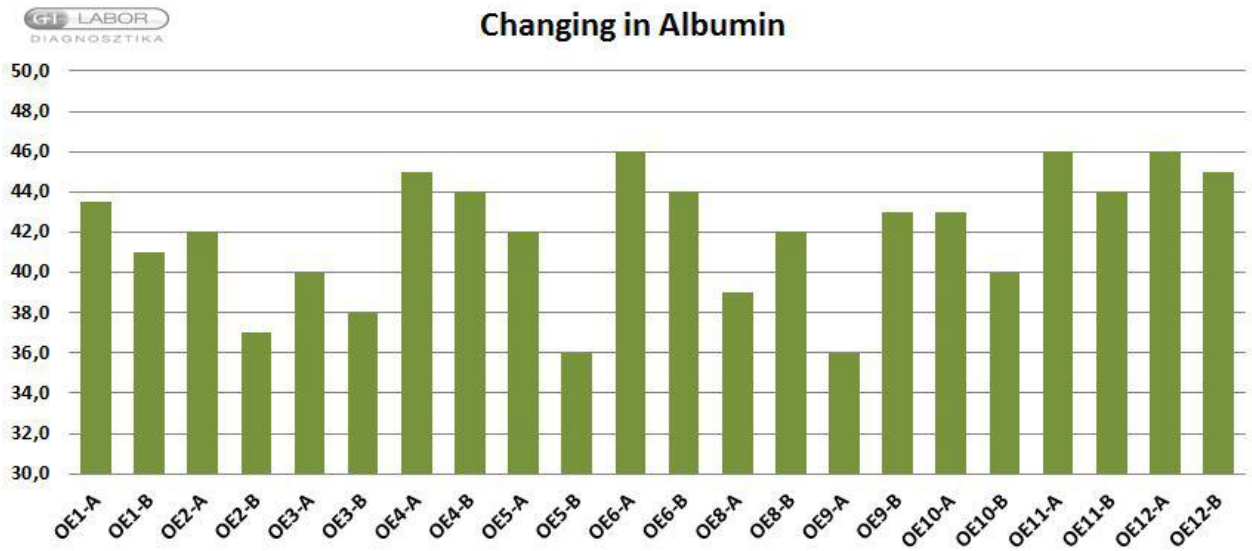
However, we have started a large-scale, controlled testing of EMOST treatments (with forty subjects and with sham exposed controls) regarding its effectiveness on serum parameters and electrocardiogram. We hope that we can report the results in the near future.

Results:

		OE1-A	OE1-B	OE2-A	OE2-B	OE3-A	OE3-B	OE4-A	OE4-B	OE5-A	OE5-B	OE6-A	OE6-B	OE8-A	OE8-B	OE9-A	OE9-B	OE10-A	OE10-B	OE11-A	OE11-B	OE12-A	OE12-B
mmol/l	**Chlor**	106,0	113,0	109,0	114,0	107,0	110,0	108,0	110,0	110,0	110,0	111,0	111,0	106,0	109,0	110,0	111,0	111,0	112,0	108,0	110,0	109,0	111,0
g/l	**Albumin**	43,5	41,0	42,0	37,0	40,0	38,0	45,0	44,0	42,0	36,0	46,0	44,0	39,0	42,0	36,0	43,0	43,0	40,0	46,0	44,0	46,0	45,0
U/L	**CK**	163,0	158,0	149,0	133,0	71,0	77,0	170,0	148,0	216,0	185,0	197,0	188,0	114,0	207,0	127,0	197,0	219,0	169,0	270,0	163,0	230,0	180,0
mg/l	**CRP**	3,8	3,7	3,3	3,0	7,0	7,0	2,8	2,6	3,4	3,3	1,3	1,2	4,6	2,5	5,0	2,4	2,5	2,5	2,5	2,3	2,5	2,6
umol/l	**Uric acid**	434,0	446,0	296,0	285,0	239,0	238,0	156,0	164,0	246,0	246,0	253,0	256,0	309,0	503,0	305,0	364,0	210,0	323,0	228,0	350,0	439,0	357,0
mIU/l	**TSH**	3,6	2,6	1,4	1,1	2,0	1,6	2,2	1,9	2,2	1,9	1,9	2,0	6,3	6,1	8,6	8,1	1,3	0,9	1,5	1,2	2,4	2,2
nmol/l	**Cortisol**	381,0	276,0	221,0	141,0	123,0	128,0	215,0	159,0	164,0	120,0	170,0	182,0	333,0	261,0	293,0	208,0	628,0	271,0	215,0	319,0	295,0	316,0







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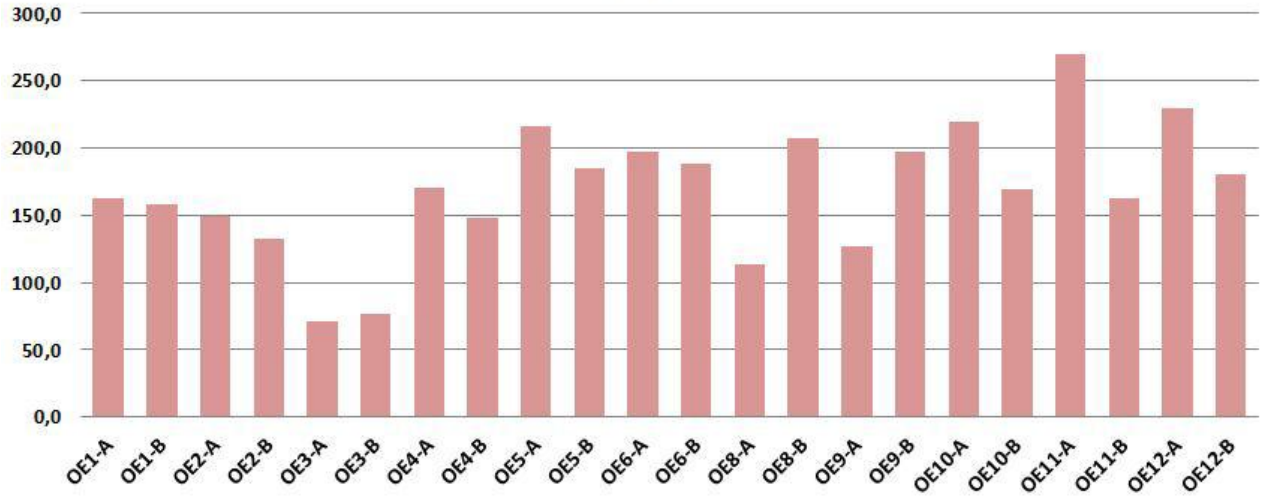
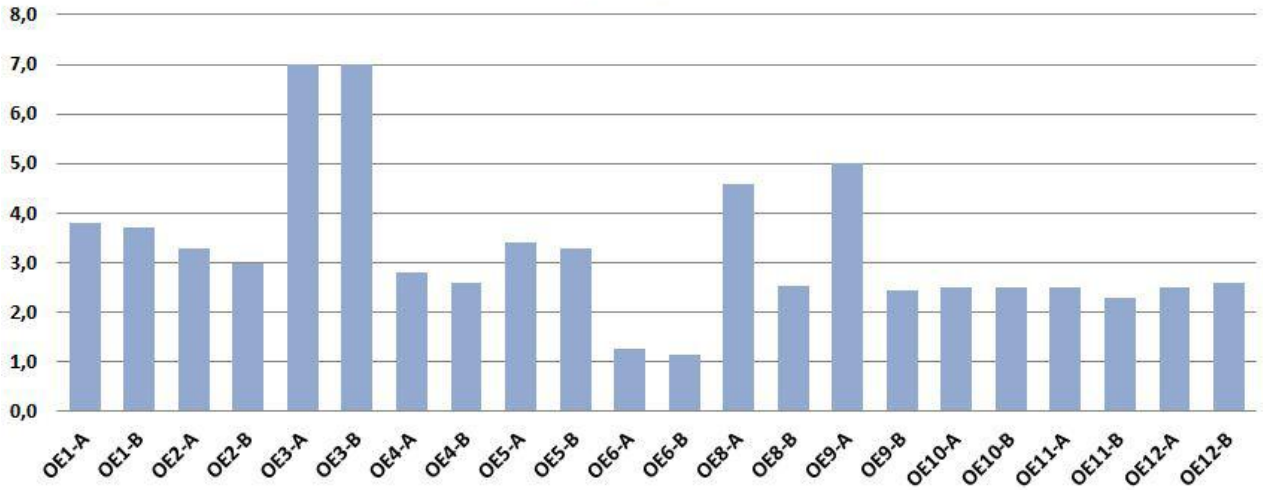
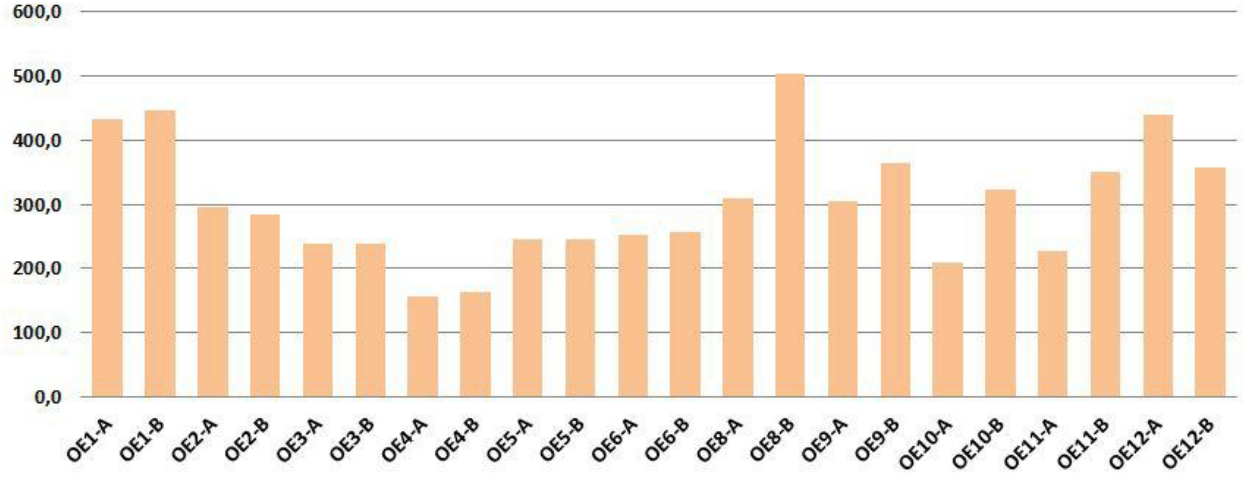
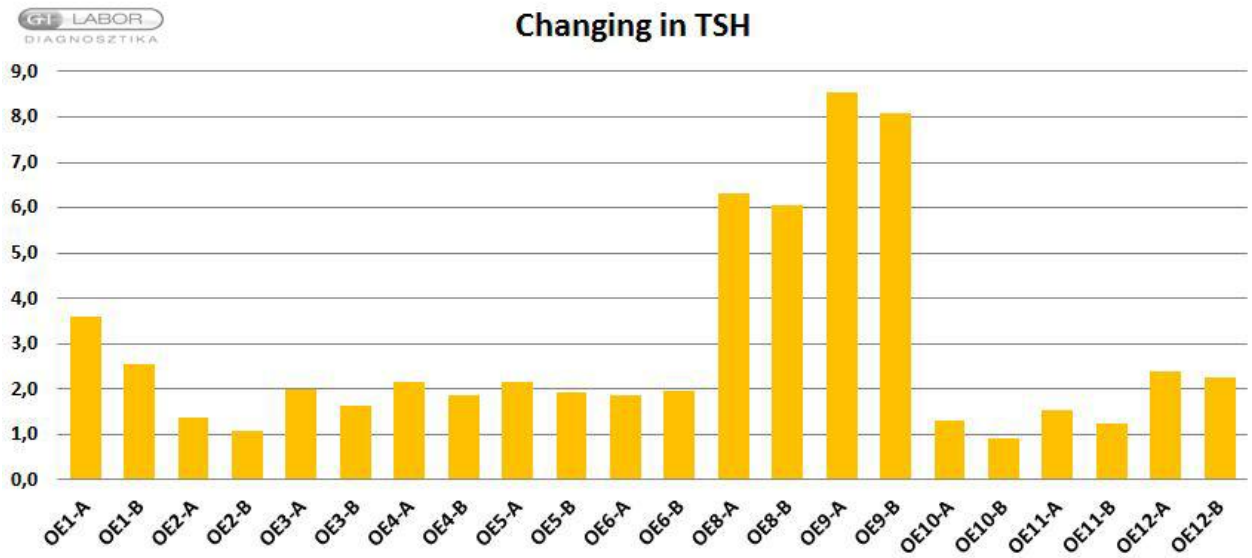


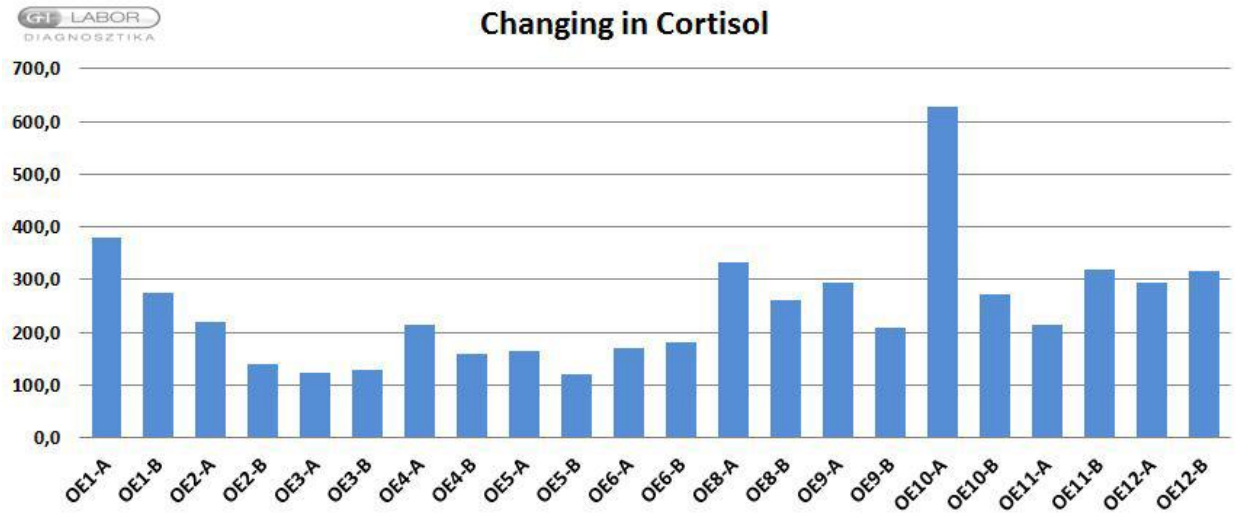
Changing in CRP



Changing in Uric Acid







István Bókkon Ph.D.
Attila Erdőfi-Szabó Ph.D
Dr., Sci-Med. Attila Till MD.

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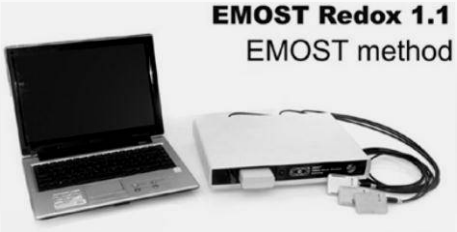
EMOST™ biophysical treatments to reduce the risk of aggressive behaviour in prisons

Biophysical electromagnetic managements

by István Bókkon
2013

EMOST Redox 1.1 Medical Device (Certificate: HU11/6192) controlled by a personal computer.



1. Background

1.1. Prisoners

Testosterone, norepinephrine, serotonin, glucose metabolism, and the aggression

Many studies on testosterone activity show a relation between high plasma levels and a tendency towards aggression. It was suggested that the interaction between low serotonin and high testosterone concentrations in the central nervous system has an important effect on the neural mechanisms involved in the expression of aggressive behavior. It seems that testosterone modulates serotonergic receptor activity that directly affects aggression, fear and anxiety. In addition, violent criminals have abnormalities in their glucose metabolism as indicated by decreased glucose uptake in their prefrontal cortex and a low blood glucose nadir in the glucose tolerance test. Low non-oxidative metabolism can be a crucial component in the pathophysiology of habitually violent behavior among subjects with antisocial personality disorder. The level of norepinephrine is also higher in aggressive prisoners than in moderately aggressive jailed inmates, which suggests a pronounced role of norepinephrine in the formation the aggressive behavior.

Sleep problems and aggression

Clinical studies revealed that sleep problems can be a contributory factor in the development of reactive aggression and violence. It seems that the relation between sleep problems and aggression can be mediated by the negative effect of sleep loss on prefrontal cortical working, namely the loss of control over emotions, including loss of the regulation of aggressive impulses to context- appropriate behavior. In addition, other potential contributing mechanisms connecting sleep problems to aggression and violence are most likely found within the central serotonergic and the hypothalamic-pituitary-adrenal-axis. Individual variation within these neurobiological systems may be responsible for amplified aggressive responses induced by sleep loss in certain individuals. Recent studies revealed that prisoners have higher levels of anxiety, sleep problems and depression than the general population.

Prefrontal malfunctions and aggression

Numerous researchers suggested that the relationship between prefrontal malfunctions and the likelihood of acting aggressively is mediated by the failure to adaptively use that we called the ‘‘executive cognitive functions’’. Executive functioning allows people to respond to situations in a flexible manner, to make and adapt plans, and to base their behavior on internally held ideas rather than being governed solely by external stimuli. There are neuroimaging data that the prefrontal cortex plays an important function in the successful identification of facial expressions of emotion. The medial prefrontal cortex is most consistently activated by emotional stimuli, suggesting it has an essential role in emotional processing. Recent *Transcranial magnetic stimulation* (TMS) experiments also support the hypothesis of inhibition deficits and frontal cortex dysfunction in violent offenders when compared with non-violent control subjects. These prefrontal structural and biochemical malfunctions can cause the low arousal, poor fear conditioning, lack of conscience, and decision-making deficits that predispose to antisocial and psychopathic behavior. It is very possible that many aggressive behaviors come about mainly automatically, emotionally, and through conditioned association with other stimuli.

1.2. Prison officers and the burnout

Prison officers are exposed to special and very powerful stressors. The effects of this dangerous work on mental health are complex. WHO (2005) is predicting that by 2020, stress can be a major cause of workplace ill health. It is well known that prolonged or intense stress can have a negative impact on an individual’s mental and physical health. Workers who are stressed are also more likely to be unhealthy, poorly motivated, less productive and less safe at work (WHO, 2003).

Prison officers are among the most stressful of all occupations. The risk of suicide among prison guards is 39% higher than the rest of the working age population. Prison

officers - compared to the general population - have been found to have significantly lower life spans and higher rates of alcoholism, suicide, heart attacks, ulcers, and hypertension. Nowadays, officers have a high level of responsibility for the care, safety, security and rehabilitation of prisoners. In addition, there are large individual differences in the response to stress i.e. two prison officers can react in completely different ways to the same stressor.

Prison officers experience a number of negative feelings and attitudes leading to depleted emotional states (emotional exhaustion) such as burnout. The burnout is a tendency toward depersonalization, which occurs as employees become frustrated with their job and less concerned for their clients and results in increasingly negative work related attitudes. Maslach's model of burnout characterizes emotional exhaustion as depletion of emotional energy and a feeling that one's emotional resources are inadequate to deal with the situation.

2. EMOST (Electro-Magnetic-Own-Signal-Treatment) treatments

EMOST method and natural-based low-frequency and intensity electromagnetic signals

There has been increasing evidence about the health-promoting outcomes of low-frequency and intensity electromagnetic fields (LFI-EMFs) that are able to initiate different healing processes. EMOST medical device can detect non-linear, low-frequency and intensity bioelectric and bioelectromagnetic signals (as ECG or EEG signals) from subjects' skin by unique flat input/output electrodes. The collected signals are processed by computer of EMOST apparatus. The subjects are treated by processed signals originated from apparatus (signal density between 1 Hz - 1 MHz; intensity range is in natural pA mV). A particular feature of EMOST method - compared to most of electromagnetic equipments - is that the subjects' own bioelectro- bioelectromagnetic signals that are detected from skin can be processed in natural analogue mode (non-digitalized). The special analogous process makes it possible that the biophysical information content of detected and back-transmitted electro-electromagnetic signal is much larger than in digitized methods (Figure 1). Next, analogue signals are radiated back, using a flat electrode radiator through various signal density/signal combinations, with some signal amplification (-20dB- +60dB), to the skin's surface on the opposite side and extended by the higher range sounds of the signal (Figure 2).

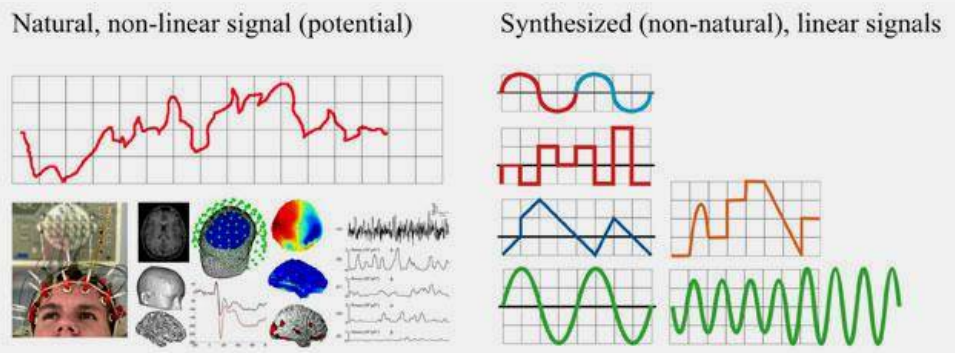


Figure 1. Differences of natural and synthesized (digilatized) signals, or impulses

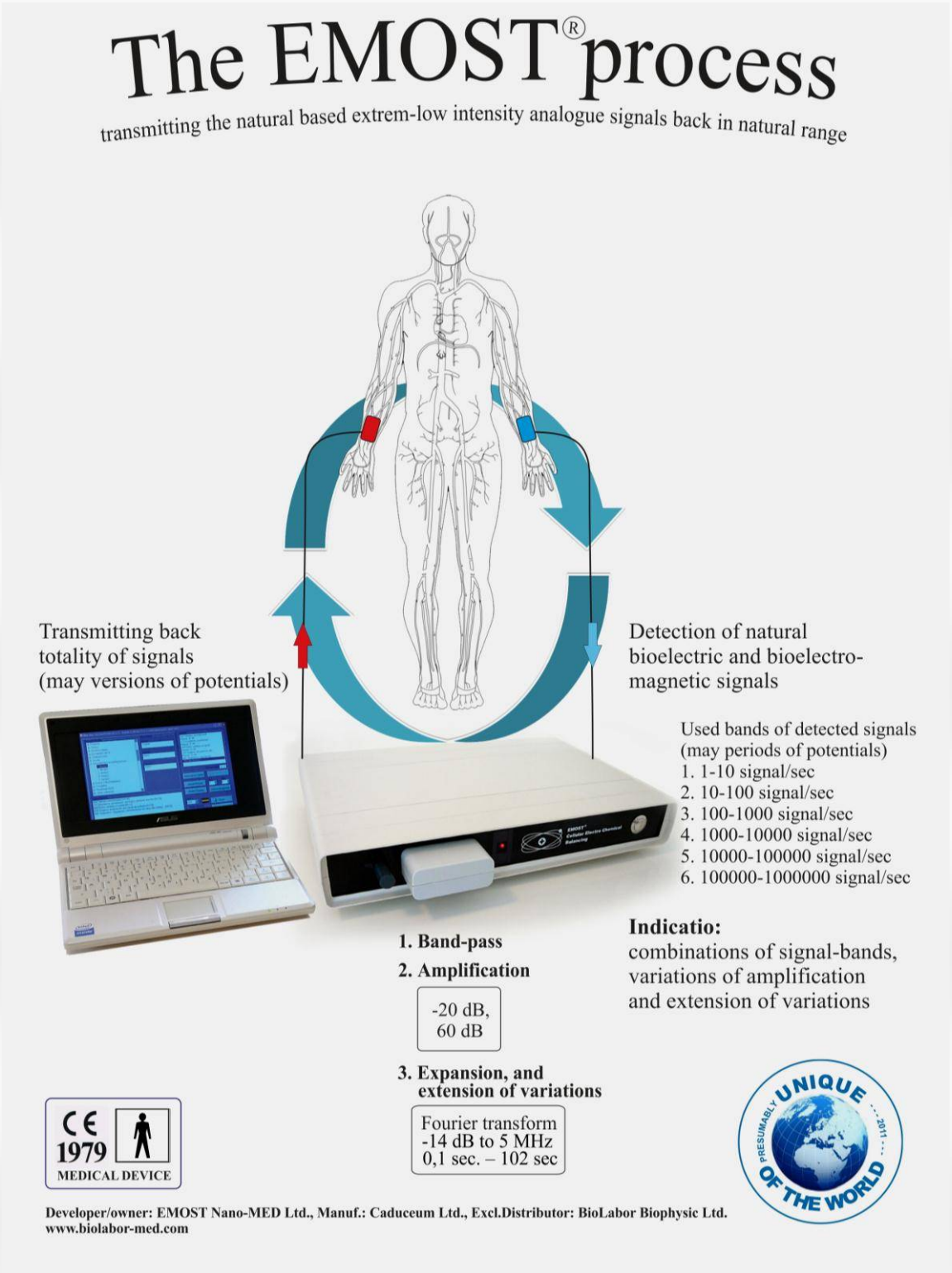


Figure 2. The EMOST process

EMOST method exerts its effect through the skin associated autonomous nervous system

The innervated skin is an incredible complex system and the largest organ of the body with numerous very important functions that is linked to the peripheral sensory nervous system (PNS), the autonomous nervous system (ANS), and the central nervous system (CNS). There is growing evidence that the cutaneous peripheral nervous system has essential roles in skin homeostasis as well as in diseases. Cutaneous nerves can react to stimuli from the circulation and to emotions. There is evidence that autonomic nervous system serves as a major component in the emotion response. Moreover, the central nervous system is directly (through efferent nerves or CNS-derived mediators) or indirectly (through the adrenal glands or immune cells) linked to skin functions (Figure 3). It suggests that skin, as our largest organ, can represent stress related conscious and unconscious emotions directly by efferent nerves and mediators from CNS or indirectly by the adrenal glands or immune cells. The represented stress related conscious and unconscious emotions can affect on biochemical, bioelectrical and bioelectromagnetic patterns. It is very probable that EMOST method exerts its major effect through the skin associated autonomous nervous system (ANS), which offers a unique therapy for the treatment of a numbers of different disorders. EMOST exposition can modulate biochemical, bioelectrical, and bioelectromagnetic processes in the skin, and the modulated skin signals can affect the neuroendocrine system and modulate brain activity through ANS.

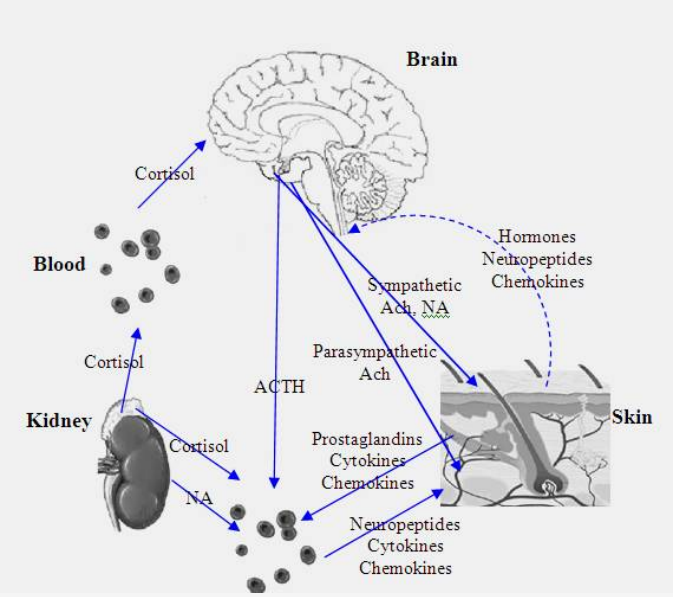


Figure 3. Shematic illustration about complex communication between skin cells and the nervous system.
Ach =acetylcholine, NA=noradrenaline, ACTH= Adrenocorticotropic hormone.

Why should be applied the EMOST method for prison officers and prisoners in prisons?

Our many years experience indicated (that we have published in academic journals) the efficiency of EMOST treatments for improve mental and physical states, i.e. stress reduction, sleep problems, improved mood, increased concentration ability, among them. The EMOST method has also been applied successfully to reduce stress under catastrophic conditions for many subjects (Figure 4). We also reported some preliminary experiments regarding the effectiveness of single EMOST treatment on some stress related serum parameters such as uric acid, albumin, cortisol, C-reactive protein etc. As we could see above, sleep and stress (aggression) are central problems under prison conditions. The systematic and routine application of EMOST treatment is not only able to reduce aggression, but also able to maintain overall health in prisons. Finally, the application of EMOST in prisons can produce significant cost saving and improve general health conditions.

Figure 4. In June, 2010 the biggest flood hit Felsőzsolca, in Hungary. Our photos have been taken in Felsőzsolca. (A) EMOST treatments of exhausted and stressed local residents, soldiers, firefighters. (B) Our car and local residents in a flooded street in Felsőzsolca, on June. 2010. (C) Residents used a boat to cross a flooded street in Felsőzsolca.

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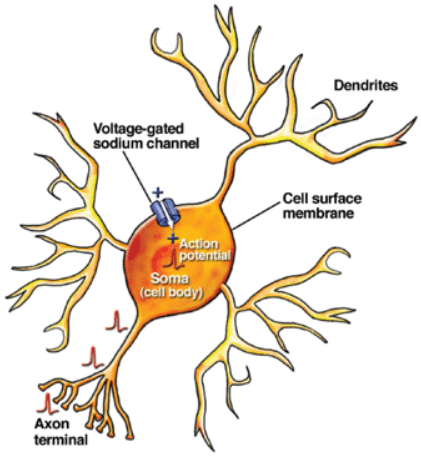
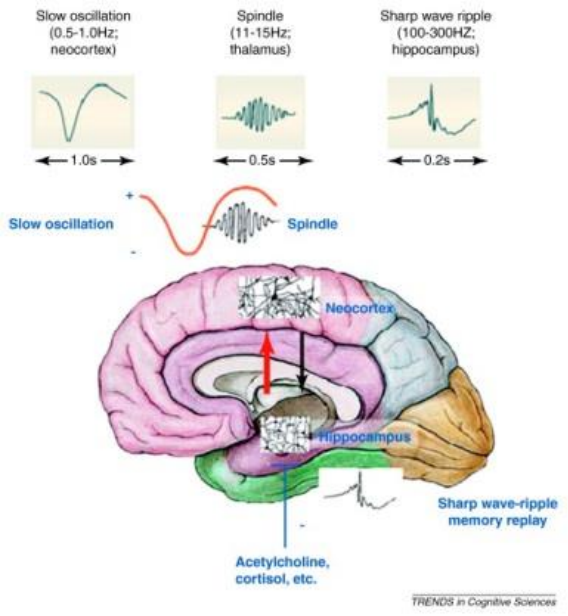
The widespread use for a variety of medical diseases of EMOST™ method is due to that the brain processes (EEG, electrochemical oscillation) can be represented on the skin through complex electro-chemical (biochemical), bioelectrical and bioelectromagnetic signals. EMOST™ method can detect, process, modify and return these represented bioelectrical and bioelectromagnetic signals that spread throughout the body and the nervous system

Various sensors, processing and storage parts or modules as well as the localized or extensive neural networks create their inherent non-linear electrical oscillations with certain frequency intervals in the brain. During information processing, storage and continuous interaction, neural networks inhibit, stimulate, modulate, and synchronize each other depending on the actual tasks in the brain. Functional parts of the brain continuously and simultaneously produce wide range of frequencies and amplitudes that are interactions. The signal density (more information can be accommodated in the smaller the higher the signal density) of the various units of the brain appears to be related to neuronal receptor density. There are many millions on each neuron surface that bear different quality signals receptors which density is increased or decreased depending on the task.



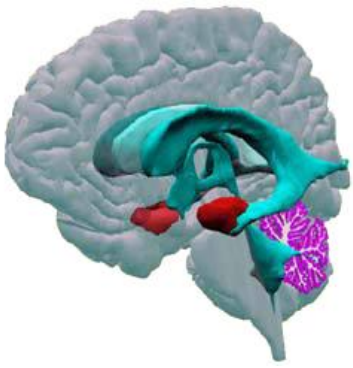
The brain is an electrochemical organ, which generates about 10 watts of electrical power. Based on fundamental laws of physics, non-linear electrical (electrochemical) signals simultaneously produce non-linear electromagnetic signals. The EMOST™ device can detect and process the brain waves that are also represented on the skin as electrochemical and electromagnetic signals.

The EEG oscillations reflect differences in normal and pathological brain function. In general, the EEG range is divided into the following frequency ranges. Gamma frequencies greater than 30 Hz, Beta frequencies between 13-30 Hz, Alpha frequencies between 8-12 Hz, Theta frequencies between 4 -8 Hz and Delta frequencies that is less than 4 Hz. The signal strength (amplitude) of the different frequencies is between 10-100 microvolt. Subsequent research revealed that the aforementioned frequency range includes high-frequency EEG oscillations (HFO), which is characterized by several simultaneously operating frequency ranges of short rhythmic brain waves. HFO often contains 30-80 Hz Gamma oscillations, fast ripple oscillations between 80-250 Hz and 250-1000 Hz ripple oscillations. It is likely that the HFO indicates the local neural network ensemble during mutual activation. Ripple oscillations for example, between 100 -200 Hz vibrations are detected in the normal hippocampus and entorhinal cortex (entorhinal cortex = EC is in the temporal lobe and is an important connection point between the neocortex and hippocampus) and is typically seen during deep sleep (non-REM). HFO may also be suitable for the detection of epileptic zones.



The alpha waves (8-12 Hz) are coherent and synchronous electrical oscillations arising from the thalamic pacemaker cells (core groups in the thalamus), which send electrical signals mainly to the frontal and the visual cortex.

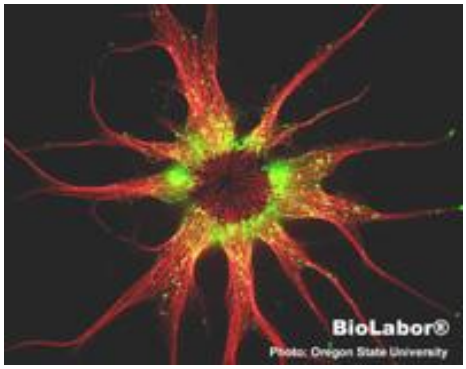
The 4-8 Hz theta EEG oscillations occur in individual neurons as well as in the wide neural network levels. The hippocampus involved in memory storage and retrieval processes in the sensory-motor system, coordination of learning, sleep and control of behavior, etc. There are two typical theta activities in hippocampus, 6-12 Hz, which is the involuntary movements, running, swimming, etc. and 4-9 Hz that connected for example, REM sleep and sensory perceptions. The amygdala performs internal rhythmic membrane potential oscillations in the theta create a 4-12 Hz frequency range.



The amygdala is critical to the emotional processes and memory processing. The theta-frequency synchronization of the interconnection of the amygdala- hippocampus system plays a key role in interaction as fear conditioning and emotional learning.

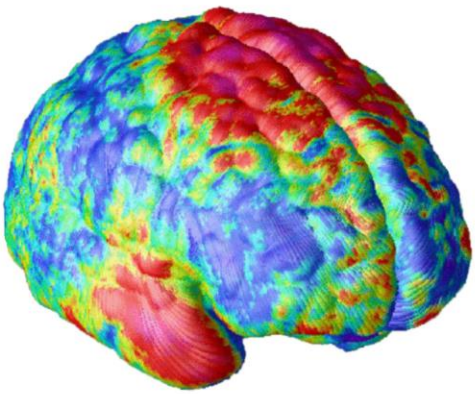
Beta activity is characterized by rapid frequencies between 13-30 Hz, which reflects the de-synchronization between neurons in active brain tissues. The beta-range frequencies have key role in cognitive processes during normal waking consciousness, concentration, worrying, and presence of Beta activity is the most prominent in the frontal cortex.

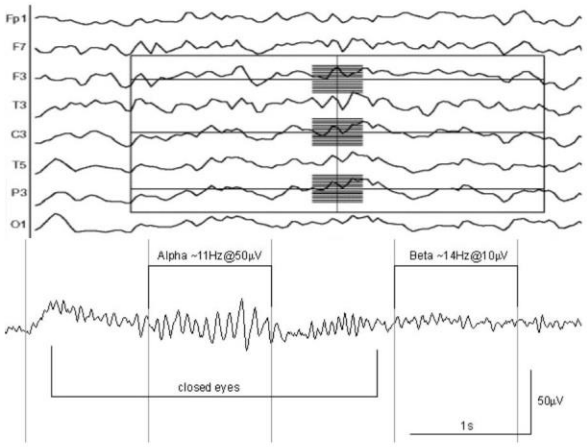
Gamma frequencies between 20-80 Hz appear virtually every part of the brain, and play a crucial role in selective attention, associative learning, emotional evaluation of visual-motor integration, sensor processes, working memory, long term memory processing, etc. Gamma deficiency causes learning disorders.

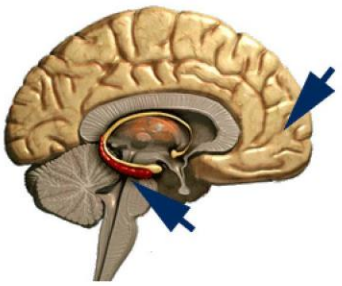


Generally, EEG frequencies are dependent on the metabolic neural processes, the hyper- or depolarized states of neurons and the resting membrane potential. The different functional and structural parts of the brain simultaneously operate in many typical frequency ranges, as briefly described above regarding the hippocampus, cortex, amygdala and thalamus. The widespread use for a variety of medical diseases of EMOST™ method is due to that the brain processes (EEG electrochemical oscillations) can be represented on the skin through complex electro-chemical (biochemical), bioelectrical and bioelectromagnetic signals. The EMOST™ method can detect, process, modify and return these represented bioelectrical and bioelectromagnetic signals that spread throughout the body and the nervous system, and act like ultra-fine neuromodulator.

The EMOST™ device operates between 1 Hz - 1 MHz frequency range. The 1-100 Hz of the EMOST™ is linked to Gamma, Beta, Alpha, Theta and Delta brain associated processes and frequencies. The kHz range of the EMOST™ is linked to high frequency (HFO, 80-2000 Hz) processes. Range from KHz-MHz of the EMOST™ device is assigned to the neuro-cellular processes.







Probably:

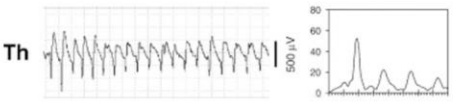
Frontal lobe: also involved in emotion, and in the ability make plans, think creative, and combinations of synapses (from/to memories, experiences etc.)

Amygdala: evaluates sensory information, determining it's importance, agression, anxiety...

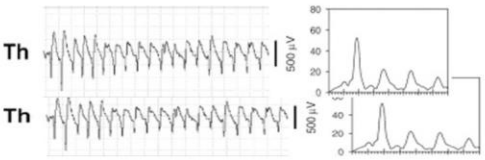
Thalamus: relay center, directs sensory messages (signaling testosterone immun function, apoptose etc.)

Hypothalamus: responsible for regulating basic biological needs: temperature, thirst, hunger etc.

EMOST ™ recognising and separating it's functional bioelectric signals in it's natural range: (from 1 Hz, potentials µV)



EMOST ™ makes slightly variations of amplification (from 1 Hz, potetntials µV, from -20 dB to 60 dB) via analogue (non-linear, non-digitalized) mode, and makes expansion, slightly extension of functional signal variations via Fourier lines (-14 dB, 5 MHz)



EMOST ™ - the EM Own Signal therapy ™ - then the variations and the original functional signal are returned through another free nerve ending zone, and helps for the neurovegetative system in signal transmission, signal recognising and electro-chemical balancing.

EMOST ™ - the EM Own Signal therapy ™ - the retransmitted own information helps re-coordinating of functional signal, and the retransmitted own functional signal energy has enough redundancy to overcome the dead point and to regain balance.

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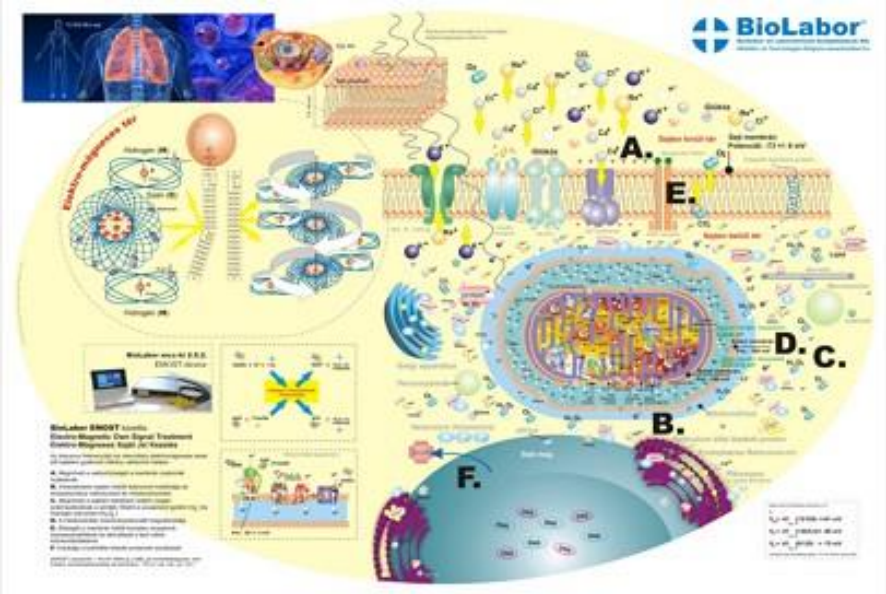
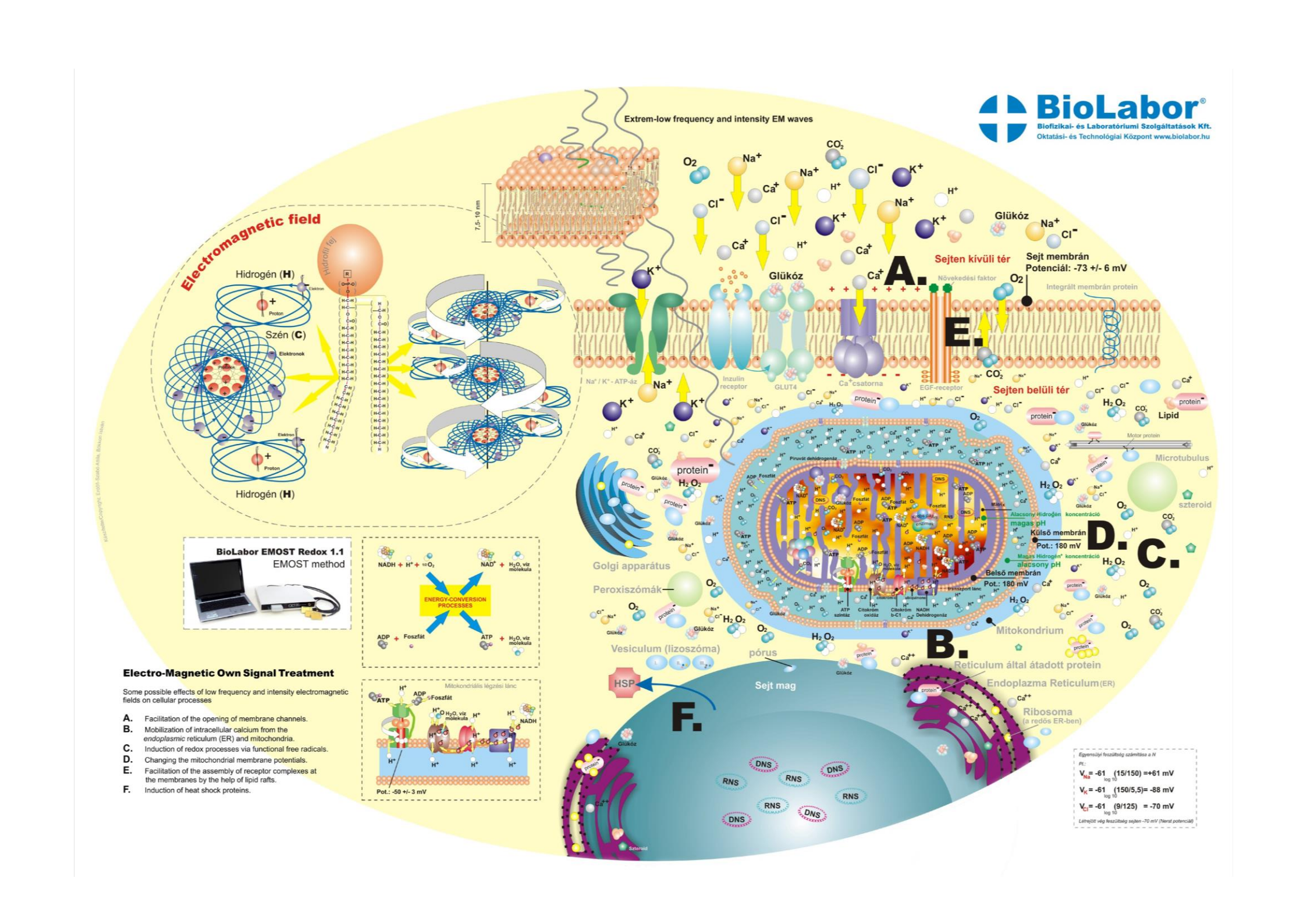
Some effects on cellular processes

- facilitation of the opening of membrane channels
- mobilisation of intracellular calcium from endoplasmic reticulum (ER) and mitochondria
- Induction of redox processes via functional free radicals (superoxide O_2 and hydrogen-peroxide H_2O_2)
- changing the mitochondrial membrane potentials
- facilitation of the assembly of receptor complexes at the membranes by the help of lipid rafts
- induction of sythesis of heat shock proteins





Electro-Magnetic Own Signal Treatment

Some possible effects of low frequency and intensity electromagnetic fields on cellular processes

- **A.** Facilitation of the opening of membrane channels.
- **B.** Mobilization of intracellular calcium from the *endoplasmic* reticulum (ER) and mitochondria.
- **C.** Induction of redox processes via functional free radicals.
- **D.** Changing the mitochondrial membrane potentials.
- **E.** Facilitation of the assembly of receptor complexes at the membranes by the help of lipid rafts.
- **F.** Induction of heat shock proteins.

The effect of the EMOST™ is due to the bidirectional communication between the nervous system and the skin cells

According to research, the skin is the largest organ of the body and is the most densely innervated that is functionally linked to peripheral, autonomic and central nervous system. There is bidirectional communication between the nervous system and the skin cells: *directly* to the central nervous system (the drain nerves and central nervous system mediators) and *indirectly* connected to (adrenal, immune system) by functions of the skin (see Figure). The autonomic nervous system has a central role in emotional responses. The emotions create specific autonomic nervous system activity. The basic emotions (happiness, surprise, anger, fear, sadness and disgust) induce specific autonomic patterns in the skin revealed by the electrical skin resistance, skin conductivity, electrical skin potential, skin blood flow and skin temperature measurements. The skin is able to represent the conscious and non-conscious emotions and brain processes can appear in the skin cells as complex electro-chemical (biochemical), bioelectrical and bioelectromagnetic signals.

Recent experiments show that magnetic stimulation of acupuncture points on the skin modulates EEG and acts on specific brain regions. The experiment indicates that the magnetic signals on the skin capable of activating specific brain regions. Merkel excitable cells in the skin (near the sensory nerve endings) can also act as magnetic receptors. The weak electromagnetic fields are capable of promoting the growth of skin keratinocyte cells and skin modulates chemokine production and inflammatory processes, act through the inhibition of NF-kappaB signal path. Weak low-frequency electromagnetic fields modulate cyclooxygenase-2, inducible nitric oxide synthase, endothelial nitric oxide synthase enzyme expression / activity in human skin keratinocyte cells.

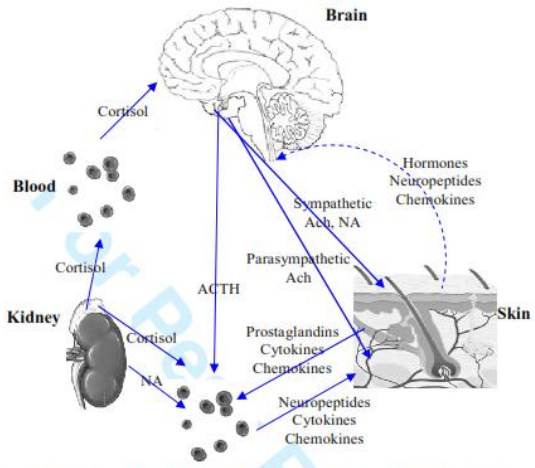


Fig. 3. Shematic illustration about complex communication between skin cells and the nervous system. Ach −acetylcholine, NA−noradrenaline, ACTH− Adrenocorticotropic hormone.

The mentioned experiments and the models indicate that the skin is a complex organ, can represent the brain/neural processes and also can perceive and spread weak electromagnetic signals throughout the body and the nervous system. This guarantees that the ultra weak electromagnetic signals from EMOST™ device are based on the subject's own signs and when these ultra weak electromagnetic signals are returned to the skin surface

do not elicit any action potential, but exert an ultra weak effects like a neuromodulator (fine-tuning effect).

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How output signals from EMOST device can reach to all parts of body

1. EMOST-sensor
2. skin
3. epidermis
4. dermis
5. fat
6. blood wessels
7. sweat gland
8. receptors
9. free nerve endings
10. nerve
11. neuropeptides
12. fybroblasts, keratnocytes
13. hormones 14. proteases, cytokines 15. Merkel-cells, local immun system

I. First signal way: Output signals from EMOST™ via a flat electrode can influence bioelectrochemical and redox processes of blood circulation of arterial and capillary systems under the skin thus output signals can reach to all parts of our body.

II. Second signal way: Output signals from EMOST™ via a flat electrode can influence terminal nerves and sensory receptor cells in the skin. Excited fibres of sensory skin receptor cells convey the EMOST™ induced signals to spinal nerves or cranial nerve, which can modify membrane and action potentials.

III. Third signal way: Output signals from EMOST™ via a flat electrode can influence immune system of skin. It is less known that there is twice as much T cells in our skin than in our circulation blood. However, according to latest scientific results, the skin works as a neuroimmuno-endocrine organ.

IV. Forth signal way: Output signals from EMOST™ via a flat electrode can influence terminal Merkel cells the skin, as a bipolar electro-accupuncture effect –with non-invasive. The Merkel cells modify the ATP activity. The ATP-activated sensory nerves also lead to modulation of the activity of brain-stem neurons controlling autonomic nervous system functions of gut, lung, urogenital, and cardiovascular systems—all of which have been treatment targets for traditional acupuncture procedures.

Testimonies

http://www.emost-med.com/testimonies/

Own scientific literature related to research with EMOST™ device

- Bókkon I, Erdöfi-Szabó A, Till A, Lukács T, Erdöfi-Szabó É. (2013) EMOST™ : Elimination of chronic constipation and persistent diarrhoea by low-frequency and intensity electromagnetic treatment in children: case reports. *Electromagnetic Biology and Medicine In press*
- Bókkon I, Erdöfi-Szabó A, Till A, Balázs R, Sárosi Z, Szabó ZL, Kolonics G, Popper G, (2012) EMOST™ : Report about the application of low-frequency and intensity electromagnetic fields in disaster situation and commando training. *Electromagnetic Biology and Medicine* 31, 394-403.
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- Bókkon I, Till A, Erdöfi-Szabó A (2010) Phantom Pain Reduction by Non-ionizing Electromagnetic Treatment. *Hungarian Epidemiology* 7/4/Suppl. p:15. Abstract

(translation of reference letter)

HONVÉD
Önkéntes Kölcsönös Kiegészítő
Egészségbiztosító Pénztár
1135 Budapest, Aba u. 4.

ARMY Independent Voluntary Health Insurance Fund

1392 Budapest, Pf.:295 web:www.honvedep.hu E-Mail: honvedep@honvedep.hu
Tel:(+36 1) 412-3320,412-3321; HM 277-95 Fax:239-6749 HM fax: 278-94
1135 Budapest Aba utca 4.

Additional ARMY Independent Voluntary Health Insurance Fund was launched in March 1996 as a sector insurance and it has been opened as publicly found since 2005.
The number of institutional employers are over 100, who are paying their employer contribution. The fund's largest employer is the Ministry of Defence. The membership of health fund exceeds 30,000 people.

We have had a health service contract between our Health Service and Your Company for around three years, to provide the preventive care, screening, and health needs of our members.
During the last period of the staff took health services, which included medical tests after developing Personal Health Plans and treatments.

The treatments aimed at health prevention and rehabilitation, mainly:

- to improve physical well-being
- improving vital capacity
- treating post-traumatic stress
- other e.g. wound healing, digestion, allergies, pain relief

Recently many of our members took advantage of the advanced services.of your Health Service. Our members consider the service appropriate, effective and they are still being used.

Your professional commitment is demonstrated by being on demand at our events free of charge and by giving free presentation of your services. Hereby I would like to thank you for your work at our recent common successful introduction in Veszprém village (at Military Day).

I wish you good luck to your work, and I hope for further successful cooperation,
18.06.2012. Budapest, Hungary, EU

Dr. Miklós Rékai
managing director,
ARMY Independent Voluntary Health Insurance Fund

translation of clinical reference letter

ORSZÁGOS ORVOSI REHABILITÁCIÓS INTÉZET

National Institute for Medical Rehabilitation, Budapest, Hungary
Budapest, Szanatórium utca 19. http://rehabint.hu/welcome.htm

Dear Mr. Dr. Attila Erdőfi-Szabó,

Since 2010 we have been using EMOST method at our department in the process of rehabilitation following limb amputation together with the procedures stated in the rehabilitation protocol. We have been using this technology aiming mainly at reducing and stopping phantom pain and reducing the post operation post traumatic stress of the patients having been operated on. After the medical attendance aiming at the above mentioned goals we experienced the following results:

a) there is less formation of phantom pain after the operation
b) higher number of decrease and stopping of phantom pain
c) post traumatic stress of limb absence is significantly less in the treated patients
d) healing of the wound is significantly faster, the stump can be strained much earlier
e) sleep quality in treated patients is significantly better than in the non-treated ones
f) psychological status of the patients treated is significantly more propitious than in non-treated ones

In our department we used this method with patients having defecation and urination problems which made the rehabilitation process more difficult and thus making their quality of life worse.
According to our experiences we can state that using the equipment for these purposes, defecation and urination malfunction of treated patients decreased significantly, including stool retention and urinary retention and the decrease and stop of incontinence caused by stress.

It is a particularly good result because of the limitation of motion and the high risk of motion deficits, because the imbalance of "freshly" Amputees and the the number of injuries caused by falling due to perceiving the not yet accepted altered body image can be significantly reduced.

Our experience also suggests that the central nervous system and autonomic nervous system treatments resulted in the patients body detection is better than in non treated patients.
This way getting used to artificial limb is quicker, and more efficient thus reducing the risk of falls and the consequential formation of necrosis of the stump, while the rehabilitation time improves.
As we have reported in the magazine *Electromagnetic Biology and Medicine*, we found that patients treated with our method are needed smaller proportion of reamputation so the positive results exist, thus long-term effects can be assumed.
According to our experience we have gained so far, the EMOST method and equipment is considered a promising method because of its beneficial and spectacular impact on the nervous system, the conductivity and the post traumatic stress.

On behalf of my colleagues and myself I claim to continue the collaboration in the research team's work, so that the procedure based on the further results can be included in the protocol of amputee rehabilitation.

I wish you success in your work,
18.06.2012, Budapest
Dr. Attila TILL, Chief Medical Head of Department, Amputation Surgical Dep.,
National Institute for Medical Rehabilitation

ORFK
Rendészeti Szervek Kiképző Központ
Lőkiképzés- és Intézkedéstaktikai Alosztály
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BM ☎:28-012 Városi ☎:476-3445 BM fax:28-062 Városi fax:476-3446

Egyetértek:
Simon Géza
igazgató

translation of reference letter

Hungarian National Police and Provost Duties, Armed Marshalls Training Center (ORFK-KK) Marksman- and Tactical Units Training Department

approved by Simon Géza

director

Referring to your report of 15 November 2011 concerning the efficiency of EMOST treatments on the staff taking part in the training program for special units during the period of 4-7 October 2011, I congratulate you on the achieved results.

While consulted the staff about the treatment I got positive feedback on the treatment only. You managed to achieve development and measurable decrease of stress load in training circumstances.

Special congratulations on the proven results which exceeded your estimated rate.

I am delighted that the technology has been tested first in the world in the (Hungarian) National Police and Provost Duties, Armed Marshalls Training Center Marksman- and Tactical Units Training Department in lifelike mission environment, in real situations.

I wish you good luck to your work and to effective adaptation of your method.

28.11.2011, Budapest,

Zoltan Laszlo SZABÓ, Ret. Police Lieutenant-Colonel,
Marksman- and Tactical Units Training Department Chief

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TO: Dr. Erdőfi-Szabó Attila Ph.D.,
BioLabor Biofizikai- és Laboratóriumi Szolgáltató Kft
H-1122 Budapest Városmajor u. 20. I/20

SUBJECT: **LETTER OF APPRECIATION**

DATE: 18 JUNE 2012

Dear Professor, dear Attila,

Congratulation to your scientific results, which were recently published in Electromagnetic Biology and Medicine (2012.VI, DOI: 10.3109/ 15368378.2012.681823). I see it as a great prospective in future not-yet-conventional training and rehabilitation processes.

With the hope of further successful cooperation I wish you all the best!

Lieutenant Colonel Robert BALAZS MD
Lessons Learned Branch
Acting Chief