

# The Continuum of Mind-Body Interplay—From Placebo Effect to Unexplained Cures

Marcelo Saad<sup>1\*</sup> & Roberta de Medeiros<sup>2</sup>

<sup>1</sup> Universidade de Santo Amaro, S. Paulo (SP), Brazil

<sup>2</sup> Centro Universitário S. Camilo, S. Paulo (SP), Brazil

\* Marcelo Saad, E-mail: msaad@uol.com.br

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## **Abstract**

*Mind and body are components of the same entity, with many relations of great importance to health and disease. The next medical frontier will be to answer what are all the mind and body relations, and how it can be explored in clinical practice. In the present manuscript, the authors collected elements that could collaborate to such advancement. The first challenge is to identify how diverse mind-body phenomena, apparently different, may share common grounds, as different manifestations from a unique self-healing mechanism. The range of such spectrum goes from the underestimated placebo effect to the unexplained cure of serious diseases. In such continuum of common and uncommon phenomena regarding mind-body interactions, small daily wonders may be found in the placebo effect and spirituality in health; unusual special marvels may be found in altered states of consciousness; and great rare miracles may be found in trance states and unexplained cures. Some informal mind-body interventions may have the potential to support the clinical treatment and they could be prescribed by every clinician. Finally, the advancement of the self-healing concept could lead to a better clinical exploration of such natural hidden potential.*

## **Keywords**

*mind body relationship physiology, Psychoneuroimmunology, Psychophysics, Psychosomatic Medicine, Soul Body Relations, spirituality*

## **1. Introduction**

The field of psychosomatic studies opened a fundamental road to the understanding of human health, disease and healing, since mind and body relations indubitably play important roles in such states. The next medical frontier to be conquered certainly will involve questioning: What are all the relations between mind and body, and how can it be explored in clinical practice? Answers should bring resources to medicine that will have a potential for transform it, perhaps as much as did the advent of

penicillin. In the present manuscript, the authors collected elements that could serve to collaborate to such advancement.

As psychosomatic research goes on, the understanding of mind-body interplay is progressively improved. An old interpretation placed mind and body as two different entities, with few relationships of minor importance, with emphasis on biology. Currently the concept evolved to consider mind and body as two components of the same entity, with many relations of great importance, playing an important role in health and disease. Moreover, contemporary scholars (Beauregard et al., 2014) question whether there is a deep interconnectedness between mind and the physical world. According to quantum mechanics, the consciousness of the observer is vital to the existence of the physical events being observed, and that mental events can affect the physical world. Thus, mental intention could influence the state of the physical world. In this sense, mind and body may have deeper connections, such as that supported by ancient practices, religious traditions, and contemplative approaches. Paraphrasing Shakespeare (in Hamlet): we could say “... *there are more things in mind and body than are dreamt of in our philosophy*”.

The main challenge in understanding mind-body interplay is to identify how diverse phenomena, apparently different, may share common grounds, as manifestations from a unique self-healing principle. The range of such spectrum goes from the underestimated placebo effect to the stigmatic unexplained cure of a serious disease. Maybe this odd range is a scalar presentation of a single continuum. The frequency and the magnitude of the phenomena are possibly determined by factors beyond the current understanding. In such continuum of regular and irregular phenomena regarding mind-body interactions, small daily wonders may be found in the placebo effect and spirituality in health; unusual special marvels may be found in phenomena related to altered states of consciousness; and great rare miracles may be found in trance states and unexplained cures.

## **2. Small Daily Mind-Body Wonders**

In the present text, the authors take wonder as a strange fact, but yet natural and real, such as the production of a tree from a grain of seed. In this regard, there are small and daily mind-body wonders, manifested in the relaxation response, the placebo effect, and in the effects of spirituality over health. The simplest one, relaxation response (the counterpart to the stress response) produces important physiological changes including reduction in blood pressure, heart rate and oxygen consumption (Buttle, 2015). More impressive, genomic changes (in both short and long term practitioners) include enhanced expression of genes linked to energy metabolism, mitochondrial function, insulin secretion, and telomere maintenance; it is also detected reduced expression of genes linked to inflammatory response and stress related pathways (Bhasin et al., 2013).

Placebo effect is generally treated as an undesirable and inconvenient outcome in clinical research. However, as a modulation of innate adaptive regulatory systems, placebo effect is a natural self-healing response, an interpersonal component of healing (Verhulst et al., 2013). Placebo effect produces robust

effects in both laboratory and clinical settings over central and autonomic nervous systems, and immune and endocrine systems. At brain imaging studies, it mimics effect of drugs at same brain areas: placebo-dopamine in Parkinson's disease; placebo-analgesics or antidepressants; and placebo-caffeine in the healthy subject (Haour, 2005).

Contemporary psychosomatics can also accommodate the healing properties of spirituality, defined as the search for ultimate meaning, purpose and significance, in relation to oneself, family, others, community, nature, and "sacred", expressed through beliefs, values, traditions and practices (Puchalski et al., 2014). There is extensive scientific documentation about the positive association between the binomial spirituality-religiosity and clinical parameters of physical and mental health, culminating in increased quality of life and longevity (Koenig, 2012). This protective effect over the mortality risk is not only statistically significant but also clinically relevant. The impact of the balanced spiritual dimension over longevity is so intense that it can be compared to lowering cholesterol, practice of exercise, or consumption of fruits and vegetables (Lucchetti et al., 2011). The causative mechanisms of this association are not yet fully understood, and include psycho-neuro-immune-endocrine pathways, greater adherence to healthy behaviors and multiple social factors (Levin, 2009).

### **3. Unusual Special Mind-Body Marvels**

Going up a step farther, one can find some unusual and special mind-body marvels. Here, marvels are extravagant facts causing astonishment, such as "the marvels of modern medicine". Unusual and special mind-body marvels are related to induced altered states of consciousness, such as advanced meditation and hypnosis. Meditation is the name of a group of techniques, most of which started in religious or spiritual traditions. The most studied technique is the MBSR (Mindfulness-Based Stress Reduction), a structured and limited program. However, in advanced practitioners of meditation or Yoga, some "involuntary" visceral and glandular functions can be voluntarily regulated. It is reported voluntary modulation of heart rate and body temperature (Raghavendra et al., 2013), as well as increase axillary temperature from normal to up to moderate fever zone (Kozhevnikov et al., 2013).

Hypnosis is a technique that produces a transient modification of cognitive and behavioral functions of the prefrontal cortex. The reduced connectivity between sensitive cortex and limbic system affects pain perception. Hypnosis remains an underestimated clinical tool, despite its potential contribution. As a recent example, a study (Corman et al., 2016) determined the additive value of hypnosis as a means of interrupt discomfort associated to trans-esophageal echocardiography. They randomly assigned 98 patients to either a control group (receiving topical oropharyngeal anesthesia only before the procedure) or a study group (receiving hypnosis session in addition). The level of discomfort was significantly reduced in the study group compared with control group. Furthermore, the subjective estimations of the length of the procedure were significantly shorter in the hypnosis group, although no objective differences were observed in the procedure length. The minor events rate was also significantly lower in the hypnosis group.

#### **4. Great Rare Mind-Body Miracles**

On top of this scale are the great and rare mind-body miracles. For our purposes, a miracle is an event that is not explicable by natural causes alone (McGrew, 2015). Great and rare mind-body miracles are related to trance states and unexplained cures. The search for scholarly articles with the word “miracle” results in limited findings, most of them addressing miracles from the perspective of saints, religions, or healers (Kub et al., 2007). However, spontaneous regression of serious diseases is occasionally registered in literature as case reports. To deserve to be published as so, the outcome must be rare and not well explained.

Unexplained cures are indeed very rare, so they are essential signs of sainthood in the canonization process of The Catholic Church. This institution scrutinizes every potential miracle rigorously. To qualify, an event must defy all natural explanations, based on the most advanced scientific knowledge of the time. Physician testimony has always been crucial to the investigation of miracles for declaring the hopeless prognosis and the surprise at recovery. Although rare, unexplained cures may happen. A survey of more than six hundred miracle records in the canonization files of the Vatican Secret Archives from the seventeenth century to the twentieth century reveals that more than 95 percent are healings from illness (Duffin, 2007). Five criteria for a miracle were outlined by Pope Benedict 14th in 1735 (May, 2003) and include an incurable disease which does not remit, is healed instantaneously, completely and without any therapy.

Miracles are theological (or philosophical) entities, but physicians can determine whether a cure is scientifically inexplicable according to the current standards of medical science (Stempsey, 2002). As these standards change, what is currently unexplained may become explainable. There is always more to know, as stated by Saint Augustine (354-430 aD): “Miracles do not happen in contradiction to nature; they are only in contradiction with what we know of nature”. Since our current explanations are unsatisfactory for these facts, perhaps the advancement of mind-body research could bring pieces to this puzzle.

#### **5. Informal Mind-Body Techniques for Clinical Practice**

In clinical practice, the physician will find many cases of mild stress symptoms or daily life stress. Such situations would require more simple approaches. Even fast and inexpensive mind-body interventions can improve health outcomes and reduce the need for more expensive medical treatments, mainly for heart diseases, chronic conditions or for preparation for surgery (Sobel, 2000). Some therapeutic modalities with potential to support clinical treatment can be easily taught and they could be explored in clinical practice. A truly committed physician would introduce the patient to some relaxation strategies, rather than merely refer him to find out a mind-body technique elsewhere. The main author, as an Acupuncturist, were always in contact with patients seeking stress management. Realizing an obligation to do more for them than just refer patients to obscure adventures, he began researching simple techniques and suggesting them during consultations. The following proposals are

the result of this experience.

### *5.1 Superficial Relaxation*

This is the simplest way to address mental stress can promote, at least, temporary relief from mental distress, as the mind temporarily quiet and dull (Dacher, 2014). Relaxation response has the potential to promote healthy genomic changes in both short and long term practitioners (Bhasin et al., 2013). Relaxation therapy appears to be effective in decreasing the frequency of cardiac events, which include cardiac mortality, reinfarction, and the need for revascularization procedures (Melnyk et al., 2016). Thus, even modest forms to exert it should not be overlooked. One simple technique is the thoughts transit control, taking some minutes to only focus breathing and organize the mind. Ask the patient to sit comfortably, close calmly the eyes and breathe with awareness (Buttle, 2015).

### *5.2 Mindfulness*

The most studied meditation technique is the MBSR (Mindfulness-Based Stress Reduction), a structured 8-week group program that has notable effects over the organism (Gotink et al., 2016). It was inspired in a practice of a monastic life, where it is a routine to pay full attention at all tasks. In an unpretentious way, the physician can inspire the patient can try to do it at daily activities, such as showering, sweeping, driving, etc. Another form to accomplish mindfulness is through a walking meditation. Ideally, it is made in a contemplative maze, but an informal substitute may be to walk mindfully, paying attention only to the present moment. The meal is also a great opportunity to practice mindfulness. Eating in silence is important in all monastic environments. A simple prayer before eating induces mindfulness for this act, and the Japanese community has a specific expression to be said before the meal, showing gratitude for food: "Itadakimasu!".

### *5.3 Paced Breathing*

The slow and deep breathing increases baroreflex sensitivity. Autonomic dysfunction due to altered vagal activity can be modulated by practicing slow, paced breathing at a frequency rate of 0.1 Hz for 20 minutes (Sasaki et al., 2014; Tsai et al., 2015). A device commercially available was developed for guide the patient to control the breathing in order to obtain physiological balance (Cernes et al., 2015). A precarious substitute, without the pretension to replicate such complex achievement, is to breathe keeping a rate of 6 cycles per minute. It can be done by inhalation and exhalation for a similar time count with a metronome set on 45 beats per minute, with 4 beats up and 4 beats down. There are several options for metronomes as free applications for smartphones, easily installed and used.

### *5.4 Aromatherapy*

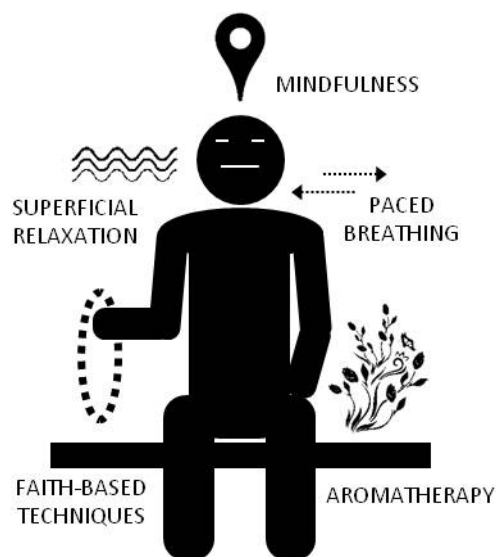
It is the use of volatile compounds with a purpose of altering a person's mind, mood, cognitive function or health, based on the theory of changes within the limbic system, the part of the brain associated with memory and emotion (Gaware et al., 2013). Essential oils can be inhaled, massaged onto the skin, diffused into the air, applied as a compress, or placed in a bath for soaking. Some principles may be borrowed from this system for an effect over stress modulation and sense of well-being using essences of chamomile, peppermint, lemon, lavender or jasmine.

### 5.5 Faith-Based Techniques

Spiritual-religious coping refers to ways that individuals utilize a personal religious or spiritual framework to cope with stress. Spiritual-Religious (S-R) coping is based upon beliefs, attitudes or practices to reduce the emotional distress caused by adverse events of life, such as loss or change, which gives suffering meaning and makes it more bearable. Such approach could regulate emotion during times of illness, change, and circumstances that are out of patients' personal control (Saad et al., 2012). Obviously, for this modality, it is not expected that the physician prescribes for the patient involvement with new doctrines. The physician's role may be to inform the patient about the potential for support and comfort that can arise from spiritual and religious traditions and rituals. The patient may decide to rescue his own cultural background in order to explore this dimension. There are also faith-based techniques, such as repetitive prayer, that can lead to altered states of consciousness (Dietrich, 2003).

## 6. Conclusion

To serve as an inspiration to the colleagues, Figure 1 illustrates the informal suggestions cited in the present paper. Although all of them are simultaneously represented, it is not expected them to be used at the same time and for all patients. How to help the patient to choose a modality among the many ones available? Mind-body therapies can be categorized (Bauer-Wu, 2002) into four general groups of mechanisms, regardless the overlap among them: sensory (e.g., aromatherapy, music therapy, massage), cognitive (e.g., meditation, guided imagery, hypnosis), expressive (e.g., writing, singing, counseling), and physical (e.g., Yoga, Tai Chi, dance). Some patients who cannot fit in a mental discipline like meditation would prefer to start with a modality from another category on the list above. For them, may be useful the inverse path, where somatic activities could ease the mental activity.



**Figure 1. Illustration with the Informal Suggestions Cited in the Present Paper**

A guiding principle of Hippocratic medicine is the *Vis Medicatrix Naturae* (the healing power of nature), meaning the organisms can often heal themselves. Thus, the physician role is to help this natural tendency. Safe and inexpensive informal mind-body interventions have the potential to support the clinical treatment and they could be prescribed by every clinician. If the continuum of mind-body interactions could link a spectrum of phenomena ranging from placebo effect to unexplained cures, the development of the self-healing concept could lead to a better clinical exploration of such natural hidden potential.

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