


**Research Article**

# Vinci Power Nap® Synchronization Technology - Neuroarchitecture for better sleep, adding Energy for Life, Reducing Stress and Jet Lag, Improving Wellbeing and Body-Mind Regeneration. Helpful for Leaders, Doctors, Soldiers, Children, Drivers, Pilots, Astronauts, People Traveling On Earth And Beyond

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## Abstract

The Vinci Power Nap® neurotechnological system created for energy naps, which can benefit mankind on Earth and in space travels. This cutting edge tool helping to reduce stress, jet lag, regulating the circadian rhythm, improving focus, efficiency, reaction times, preventing losing bone mass, the quality of sleep, health and human wellbeing in future smart cities and Lunar, Martian habitats. The remarkable results can be found in studies on UN Delegates at COP24, UNICEF project for war traumatized refugees women and children, soldiers with PTSD, pilots and analog astronauts, showing the healing power of touching, frequency of rocking, napping in a zero gravity position. Good sleep is needed to reset, recover, strengthen the immune system, also avoid errors resulting from fatigue and jet lag, which is especially important for business leaders, doctors, drivers, athletes, students, soldiers, pilots, astronauts and tourists. The frequency of the VPN technology pendulum movement is a revolution in the synchronization of breathing, heartbeat, delta waves in the brain, during which the best regeneration of the body and mind occurs. Moreover, the pulsating pressure on the skin increase the level of hormones: dopamine, oxytocin, serotonin, etc. All this contributes to the regeneration of sleep and energy, improving human's psychophysical condition, longevity and advances in sleep and space medicine.

**Keywords:** Sleep on Earth, Sleep in Space, Jet lag, Circadian rhythms, Wellbeing, Energy, Stress reduction, Efficiency, Habitats, Astronauts, Pilots, Tourists, Regeneration, Depression, trauma, PTSD, Neuroarchitecture, Vinci Power Nap, Oxytocine, Serotonin, Melatonin, Histamine, Antihistamines, Enzym DAO, Bone density, Space Medicine

## 1. Introduction

"Sleep is the single most effective thing you can do to reset the health of your brain and body" Matthew Paul Walker, scientist and professor of neuroscience and psychology at the University of California, Berkeley, Sleep Foundation.org's Scientific Advisor [1]. High quality of night sleep is an extremely important aspect of life, its basic component enabling harmonious and efficient functioning of the body and mind during the day [2]. People want to feel as a whole being - physical, mental and emotional - working in a harmonious way, where each part gently, smoothly and healthily flows together in a beautiful symphony of synchronization. However, the internal

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and external living environment sometimes gets out of balance, and some kind of tension or dissonance occurs. Sleep is critical to regeneration, cell rejuvenation, memory consolidation, and overall human health: well-being, happiness, productivity and in many cases even survival. But over 60% of people around the world are currently struggling with sleep issues [3-6], the numbers increasing every day are also generated by shift workers [7,8], „coronosomnians” [9-12] and the number of global passengers flying internationally where people are likely suffering from jet lag. Jet lag has the power to „ruin a vacation, affect athletes, musicians, doctors and businessmen who cannot perform at their peak” following the recommendations from Biological Rhythms Research Laboratory [13]. Many people have become so accustomed to not getting enough sleep that they don't even realize how the lack of it reduces the quality and safety of their lives. In this high risk group there are: the business and administration leaders, doctors, teachers, drivers, pilots, astronauts, etc. as “a 2001 study in the British Medical Journal found that stress, tiredness and lack of sleep in doctors doubles the error rates” CNN [14], and the WHO has recognized sleeplessness as a civilization disease that needs to be treated [1]. Adults and children (including newborns) around the world are faced with a variety of health issues, tiring lifestyles, travel jet lag, environmental factors and civilization’s pollutions that can block the way to the best sleep and lead to more insomnia, which reduces the body's regenerative abilities after a day's effort, creating a vicious cycle, in many cases leading to chronic illness, depression, and in the worst case, cancer or suicide, according to prof. A.Perski from Stockholm Stress Clinic [15]. These problems vary greatly from person to person. Advances in neuroscience give us the ability to more easily measure metrics and understand how shapes, colors, temperature, smell, sounds, lights, change of movement and electromagnetic fields can affect human physiology, perception, feelings emotions and health. Currently, it is already possible to use MRI machines and virtual reality to understand how brain waves behave in a selected space through biofeedback, it is very helpful to understand and create sustainable development oriented neuroarchitectural projects, which could help improve psychophysical condition and sleep [16].

In this article, the author shows how to work on bringing back harmony and increasing energy by experiencing a latest technology - neuroarchitecture Vinci Power Nap® (VPN) napping session [17], where 20 minutes of rocking in a constant rhythm in a designed environment for calming senses with a beautiful moment of suspension and return the synchronization, even after a long trip to the east crossing several time zones, supporting the treatment of stress, sleep disorders as well as trauma and PTSD, enabling the return of balance, efficiency and energy for life, which is confirmed by participants, doctors, psychologists, scientists, researchers, global institutions and top ministries [18]. The thesis of

this article is that understanding of the neurobiology and biotechnology of the connection of human body endocrine systems with the circadian timekeeping system and other environment electromagnetic rhythms, can give a grounded and rational treatment approach for jet lag. The presented research on reducing stress, trauma and jet lag, improving sleep quality, includes a review of surveys results filled by 465 UN Delegates from 58 countries who participated in VPN sessions during the COP24 Conference on Climate Change, 127 beneficences of the UNICEF project for woman and children as refugees from Ukraine with war trauma, pilots, analog astronauts, soldiers with PTSD experiencing sleep disorders, and the author's own experience of immediately overcoming jet lag after the trip from Poland to Tokio and back. The research findings and interdisciplinary connections of basic science published here have a direct impact or shed significant light on the deep aspects of sleep that contribute to the understanding of clinical sleep medicine.

## 2. The neuroarchitecture of sleep - rhythm of regeneration in future cities

### 2.1. The power of sleep

“Making sleep a priority is critical for city living” [19], as it is the biggest single benefit and prevention to chronic illness [20]. Nancy Rothstein the Ambassador of Sleep underlines that sleep is our superpower, helping in keeping focus, creativity, productivity, alertness and energy, „to live well you must sleep well.” [21]. Deep, restful sleep is essential for our physical and mental health, is a strong antioxidant with anti-aging and anti-cancer properties, supports the body’s biochemical systems and immune protection [22]. It is an essential time for healing, body and mind regeneration, brain cleansing, cognitive maintaining, preparation of professional and social human functions for the whole day [23]. New discoveries of researchers from various fields of science made a revolution of awareness about interdisciplinary nature of sleep [24,25].

### 2.2 The brain wave frequencies as rhythms

It is well known that the brain is an electrochemical organ. Electrical activity emanating from the brain is displayed in the form of rhythm of brain waves. During the day when the brain is aroused and actively engaged in mental activities, it generates beta waves [26]. During sleep, the human brain goes through a series of different stages of wave rhythms, which vary in the brain activity that occurs at each stage [27]. The cycle of each series of different brain wave stages take around 1,5 hours ( 90 minutes) and humans need 5 cycles - it means between 7,5 - 8 hours of night sleep [28]. In the initial stage of falling asleep beta waves are created, over time the brain begins to slow down to alpha waves [29]. Stage I NREM — is a light and shallow sleep, it lasts a few minutes of theta waves. Stage II NREM — takes up almost half of the

night's sleep and has a lot of spindles and K-complexes [30]. Stage III NREM - usually covers about 20% of night sleep, at this stage slow and deep delta waves occur in the brain [31]. In this part of sleep, the nervous system and the conduction of impulses from the senses are inhibited, people are less responsive and almost unaware of the external environment [32]. REM sleep - in which dreams and rapid eye movements occur [33], NREM: non-rapid eye movement.

### 2.3 The big secret of small delta waves

The delta wave has a frequency of 0.1 to 4 Hz and is a type of high amplitude in the brain when the electrical activity slows down allowing neurons starts to fire in sync with one another at slow frequency, researchers using EEG have found in humans to be associated with and measured in deep sleep REM and in stage III NREM [34]. The most important processes for cells recovery and brain cleaning take place in the deepest state of III NREM sleep - during the delta waves, when the function of slow waves is to maintain synaptic homeostasis [35,36]. The scientific studies presented data of neuroimaging from magnetic resonance imaging (MRI) studies that looked at the correlation of the heart cycle in cerebrospinal blood flow in humans, to measure physiological and neural dynamics in the human brain, video: [37], they recorded the slow waves of electrical activity of deep sleep, during which memory consolidation and hemodynamic oscillations which are coupled [38]. These delta waves trigger rhythmic cleaning of the brain by alternating blood and cerebrospinal fluid (CSF) flow "that appear to function much like a washing machine's rinse cycle" [35], which may help to remove, on a regular basis, toxic effects of metabolic and energy transformation in the brain, including beta-amyloids [39]. „These results demonstrate that the sleeping brain exhibits waves of CSF flow on a macroscopic scale, and these CSF dynamics are interlinked with neural and hemodynamic rhythms." [40]. Scientists have shown some important factors which prohibit the brain from entering delta waves and deep regenerative sleep: disturbances in the amount of melatonin [41][25][32], which inhibition of synthesis can be made by light's smog at night and blue light or lack of serotonin [42], the lack of hugging and interpersonal contact leads to a decrease in the amount of the hormone oxytocin and thus serotonin and melatonin, leading to depression and sleep disorders, etc. „Sleep deprivation and stress leads to alter immune function response as it is risk factor of inflammation" [43]. Some drugs and chemicals, as well as alcohol, caffeine, nicotine, cocaine, opioid, cannabis use affect indirectly by increasing histamine levels to endotoxemic shock and thus increasing inflammation, leading to adverse changes in delta wave activity in the brain [44]. In contrast, „ketogenic diets, which are very high in fat and low in carbohydrates, can cause an increase in the delta wave" [45]. Parkinson's, Alzheimer's disease, schizophrenia and narcolepsy may be characterized by changes in delta wave activity and sleep

disorders [36][47]. Studies show that there is a strong co-relationship between sleep deprivation and depression, insomnia treatment in patients with depression doubled their recovery chances [48,49]. More about: „Neuroscience of stress", „Sensory overload and sleep lost, chronic stress in modern, industrial cities", „Impact of senses and sleep on human performance", „Sleep deprivation and important role of NREM sleep in brain cleaning" in article: [50].

### 2.4 The rhythms of city environment and the "factory settings"

The rhythms and other frequencies of the external world deeply penetrate human life at every level, starting from the molecular, sub-cellular, cellular, tissue and its inflammatory or anti-inflammatory response, as well as the entire organism, dictating its physical and mental behavioral lifestyle. Human and other living organisms experience dramatic stress fluctuations during the day, related to the changes of external factors perceived as stressful by the senses/ sensors (temperature, noise and lighting pollutions, electromagnetic fields, heavy metals, chemical and toxic composition in food, water, air, mold, pesticides, wood preservatives, car exhaust fumes, etc.) causing the reaction of tissues and targeting mast cells to signals/ stimuli to release histamine, developing histamine intolerance (HIT). The body's reaction to these changes and an attempt to maintain biological processes within its physiologic boundaries are for example endocrine changes that play an integral role in homeostasis, aware the relationship between pollutions of environmental and the body reaction of histamine intolerance. Climate change, together with environmental and anthropogenic factors, trigger a cascading and complex series of effects that disrupt the internal order and are harmful to human health and sleep. „It is estimated that our receptors can receive about  $10^9$  bits/sec of data from the outside world [51]. This is all overwhelming, burdening human senses and overworking brains [52-54], causing exhaustion due to the amount of "energy shocks" that disrupt the nervous system [55,56]. This mobilizes the sympathetic system (the inner fight or flight response) [57,58], which in turn prevents good quality sleep and regeneration during the night." [59].

These overlapping changes of sensory stimuli and their frequency, rhythms of the external environment inconsistent with the basic rhythm can contribute to causing a mismatch between the "time /rhythm" of the body's internal systems, causing, among other things, a reduction in the quantity and quality of sleep, especially in big cities [50]. The body's inherent biological response to either internal or external insults is inflammation, as a generic (innate) defensive mechanism, designed to protect the body, to clear the cause ( e.g. pathogenic organism, irritant etc.) and enhance tissue reparation [60]. But when the body cannot remove the stimulants, which are constantly operating in the surrounding environment, response is constant and the inflammation

becomes chronic [61]. Biological, chemical, physical and radiological triggers - cause among others stress and hyperactivity of mast cells and high secretion of histamine, which together with its receptors H1, H2, H3, H4, starts the whole mechanism leading to the sleep and endocrine rhythm deregulation [62] causing also inflammations of organs, depression, chronic illnesses, cancer and in the most serious cases to sepsis, (studies shows that the rats prevented from falling asleep, after three weeks died due to systemic inflammatory response syndrome of sepsis), described in detail in author's discovery science research: "Discovery of the Mechanism..." [63]. Histamine, as the neurotransmitter, participates in several physiological processes, such as: the sleep-wake cycle because the high level of histamine inhibit the process of falling asleep and not allowing for restorative deep sleep (antihistamines which blocking its receptors in brain leading to sleepiness), memory consolidation and learning, also can act as a regulator of cerebral blood flow and blood-brain barrier permeability [64]. „Alterations in brain histamine levels are closely connected with central nervous system dysfunction, and are thought to contribute to neurological disorders" [65-67]. The reaction may create problems with the synchronization of the heartbeat and breathing during sleep, insomnia. Those sleep disorders can make people more tired, exhausted, inattentive, prone to accidents and addictions, burnt out, sick, frustrated, aggressive, anxious, vulnerable, depressed, suicidal. Climate change will affect all populations and thus generate not only economic, health but also social costs. The possibility of synchronizing human internal rhythms as a "factory settings reset" and reconnecting the senses with body, mind and environment has been relatively overlooked. The author discovers an innovative interdisciplinary mechanism of neuroarchitecture that leads to a revolution in sleep medicine.

### 3. Biotechnology of harmony as a biomechanism - what is the secret?

Humans are immersed in the so-called "harmony frequency" whose rhythm is ubiquitous and affects every ecosystem on the planet, from plants to insects, fish, birds, mammals and other animals [68]. The rhythmic pulsation occurs from the first moment of our embryonic lives in the mother's womb. The wave fluctuation of the mother's blood flow into the vessels around the placenta, gives the pressure and release felt through the whole body flowing in the fetal water. "According to standards, the correct pressure is in the range of 120-129mmHg /80-84mmHg (if we divide 129/80≈1.618; also 80/129 ≈0,618), the period of VPN's pendulum movement is 1.618s and its frequency is the reverse number 0.618Hz." [50][68,69]. A person during a VPN session can feel very similar pulsations of compression, release and tension, due to the elastic material of the VPN cocoon, gravity and the swinging motion at 0.618Hz, which falls in the delta frequency range (0.1 - 4 Hz). This felt micro-

massage of Ruffini and Pacinian receptors in the human skin and tissues, translates into the secretion of hormones (oxytocin, dopamine, serotonin, etc) [70], and the stimulation of the lymphatic [71] and glymphatic systems [72-74], gives the opportunity to drain away toxins and neurotoxins, which is helped by the laws of physics, centrifugal force and fluid dynamics (hydrodynamics). The researchers want to explore how age-related changes in brain activity during sleep may affect the associated fluid dynamics [35]. "Clearance of excess fluid and interstitial solutes is critical for tissue homeostasis" [74]. The most beneficial way to keep the lymphatic and glymphatic system running smoothly is movement, and „VPN system can deliver significant help for it by the motion of the pulsating rhythm of pendulum, which also allowing to experience: „at the highest point of the swinging a person is weightless (microgravity), then the cells stretch and absorb the water from the tissues, and when landed (hypergravity), the cells compress and excess fluid from them is forced into the lymphatic system" [75]." [50]. VPN system generates the fluid dynamics (hydrodynamics) in this special rhythm of delta waves, which can help in cleansing the immune system, increase activation of enzymes neutralizing histamine [76], and at the same time: harmonizing heart, respiratory and brain functions - leading to deeper sleep at night [69]. „The harmonization of central histaminergic system plays an important role in the complex sleep-wake cycle, promoting cortical excitability during waking and attention, and it consolidates the wake state." [77-79].

Harmony - is the human term for a certain favorable situation that physically and mentally feels pleasant. Harmony is homogeneity in variety, if something is harmonized, it means that it fits nicely together, the best example is the golden ratio and its proportion, its rhythm that can be sensed - like gravity, and no matter what part of the world someone lives in, is a subject to its action, and is felt as the "primordial vibration of the universe" that sets atoms in motion with its sound, in certain order, symmetry or harmony in the world. What is its biggest secret? The fact that the golden ratio is not just a mathematical number - it is a variable frequency in its two values, allowing to create fractals, where the smaller part is to the larger as the larger is to the whole. The whole discovery is explained in the autor's science article: „Frequency of harmony....." [68]. Assuming that there was a sound in the beginning of time, the frequency of the vibration in the golden ratio could create a symphony of "music of the spheres", as the golden proportion is also present in the musical notation. Cymatics is the latest branch of science about sound waves and their effects on physical substances, its research shows how a certain sound tone can create a material shape [80-84]. Sounds combined harmoniously have a positive, body-mind pleasing effect, and dissonances work in a disruptive and destructive way on our perception and psychophysical condition [85].

## 4. Circadian rhythm, hormones and jet lag - impact for travelers

### 4.1. Circadian rhythm

The Nobel Prize in 2017 in Physiology or Medicine for their discoveries of molecular mechanisms controlling the circadian rhythm, was given to Jeffrey C. Hall and his colleagues. The circadian rhythm is observed as a biological process in which there is an endogenous autonomic oscillation of the internal rhythm with endocrine mediators such as serotonin, melatonin, etc., generated and synchronized with the rhythms of the external environment in a 24-hour circadian cycle, are found in a different kind of organisms, including plants, fungi, animals, and cyanobacteria [85]. „Living organisms are full of various kinds of clocks - molecular, neuronal, chemical, hormonal, each of which is more or less aligned with the others.” [86]. „The endogenous circadian rhythms are adjusted to the environment by different surrounding cues, such as temperature, light, and redox cycles. The clock regulates critical functions such as behavior, hormone levels, sleep, body temperature and metabolism.” [87]. The circadian system runs as a result of four main components [88,89]. The researchers noted that diurnal endocrine changes are not the only response to behavioral fluctuations associated with sleep/wake/fasting cycles, but are linked to an internal clock mechanism, the circadian rhythm, which can be disrupted by genetic and/or environmental factors. Chronic misalignment in inner rhythm can increase risk of disease, including cardiometabolic diseases and cancer [89-91]. A temporary mismatch between our external environment and this internal biological clock, affects human wellbeing when there is a for example in shift work or when travel across several time zones experiencing “jet lag” [87][92].

### 4.2. Connection between melatonin, serotonin, oxytocin and environment

Science researches shown that melatonin via receptor - mediated means functions in the modulation and to entrain biological and circadian rhythms, including the brain waves and sleep regulation, has a significant impact on the neuronal and tissue regeneration enhancement of immunity, suppresses inflammation, also works as a multifunctional oncostatic, has ability to reduce oxidative stress (anti-oxidation), and takes part during the reproductive functions of many animals [93]. There is a deep connection between melatonin, serotonin and oxytocin. The neurotransmitter serotonin is the precursor to melatonin [95], the activator of release signaling substances such as opioids, serotonin, dopamine and noradrenaline is oxytocin [94]. The sun light exposure to the eyes retina significantly affects synthesis and secretion of melatonin in the pineal gland [93], and its endocrine oscillations are correlated to the movement of planet Earth and the daily light cycles [95]. The serum concentration of melatonin has a peak in the dark and is low during the daylight [95]. The pineal

gland converts and transmits light (electromagnetic) signals from the sympathetic nervous system into a hormonal signal. Hormones and endocrine factors are substances produced in organs or special cells that act in different areas than the place of secretion, allowing inter-organ communication (e.g., between the central nervous system and peripheral tissues). This chemical communication is essential for maintenance of homeostasis and adaptation to environmental changes or stresses [96,97]. More on: „Natural ways to increase oxytocin, serotonin, melatonin”; „Relationship between oxytocin, health and sleep quality”; „Like in the mother's womb - the healing power of swinging and touching”; „Serotonin - the "happiness hormone"”; „Melatonin - the “sleep hormone””; author described in [50]. Researches have found that endogenous melatonin production may respond to external environmental alterations that do not involve the light/dark cycle.” [93][98-102]. „Advances over the last few decades have demonstrated that the circadian network is in reality a multiple oscillator system, in which different tissues/cells are capable of exhibiting self-sustained oscillations in isolation” [103-106]. This realization has raised the possibility that circadian rhythms in various biological processes may be driven in part by local tissue oscillators. „Accordingly, dyssynchrony occurs at both the organism-to-environment and inter-organ levels, until all rhythm (and rhythm-regulated processes) reset fully to the new light/dark cycle.” [91, 107-110, 87]. The study’s observations show the importance of understanding that the biological clock is in the synchronization of the endogenous circadian rhythm system with endocrine, behavioral and environmental factors. The author hypothesizes that there is something like the universal rhythm of gravitation, the electromagnetic waves that interact with and influence these endogenous oscillations. The ability to synchronize all the internal rhythms with this environmental frequency can give the feeling of bliss, calm, love - it is „like coming home”. This hypothesis author described deeper in [68].

### 4.3. Jet Lag Disorder - new knowledge how to prevent and recover

Jet Lag Disorder (JLD) phenomenon and its symptoms may be different depending of the person, and is commonly associated with transmeridian airplane travels, especially felt after the flights to east direction across three or more time zones [111,112], it is presented by scientists as desynchronizing the body's internal clock with the day-night cycle at the destination place. Jet lag many times can cause sleep problems, drowsiness during the day, poor mental and/or physical performance, fatigue, mood swings and somatic, gastrointestinal issues for few days or weeks, says Jamie Zeitzer, an assistant professor at Stanford University’s Center for Sleep Sciences and Medicine. [113-115]. While jet lag can feel like a nuisance, the impact on the human body is real and frequent flyers can experience long-term health

risks, too—like an increased risk of cardiovascular disease, type II diabetes, and even cancer, according to a 2009 study co-conducted by Eastman and published in Sleep Medicine Clinics. And it tends to get worse with age, according to the American Academy of Sleep Medicine. [115, 13]. Until now there was „no single cure for jet lag” [116-118]. Understanding the connection of neurobiology and biotechnology of the human body endocrine systems with circadian and other environment electromagnetic rhythms and fields, can give answer for the treatment of jet lag. Knowledge how to prevent and recover from jet lag is crucial to help keep the sleep schedule and overall wellness during travels, to make cheerful the most of the trip. In this article author is showing studies and the remarkable effects on reducing jet lag by the patented neuroarchitecture Vinci Power Nap® system, which has the power to influence body’s circadian rhythm and can help synchronize internal clock with the one at the journey’s end. A quick nap in the VPN swinging cocoon just after the arrival at the airport or in the hotel, can help overcome jet lag-related symptoms, excessive daytime sleepiness. The important is to keep naps shorter than 26 min and make it in special VPN system created for synchronization [119]. Author have the hypothesis that swinging in VPN or swimming in the water just after flight could be helpful to reduce jet lag, the same as taking Vitamin D, D3, the enzyme DAO and antihistamines for H1, H2, H3 to take them before, during and after the flight trip or space trip [63].

#### 4.4. Shift work via jet lag and inflammations

Shift work is a specific lifestyle which is connected to exposure to circadian and sleep disruptions together with psychosocial stress. Chronic disruption of circadian rhythm because of shift work or during chronic jet lag leads to the dysregulation of the immune system, to negative health consequences, higher risk of chronic illness and pathologies. „Many of these conditions in both shift workers and experimental models share the common risk factor of inflammation. Alterations of the sleep/wake cycle affect the number of circulating lymphocytes, NK cells, and Ab titers in humans and rodents, increasing inflammatory cytokines such as IL-6, C-reactive protein, and TNF- $\alpha$ .” [120]. These studies strengthen the author’s hypothesis that it may be related to the activation of mast cells, the release of histamine and the reaction of histamine receptors that release the above-mentioned inflammatory cytokines, moreover, histamine opens the blood-brain barrier and triggers the neurological H3 receptor, confirming the suggestion: "effects imposed by the innate immune system’s circadian rhythm is mediated by pro-inflammatory cytokines in the brain" [120]. Comparing studies on sleep disruption, it is hard to distinguish effects on the immune system that can be created by stress, sleep loss, desynchrony of circadian rhythms or jet lag, as they are so similar, but there are science evidence that there is bidirectional relationship between circadian rhythm and

immune system [120] probably creating the mechanism of mast cells activation to histamine release and its related inflammation, leading to tiredness, exhaustion, sleep loss as effects of shift work or jet lag.

#### 4.5. Stress - for pilots, astronauts, flight controllers and drivers

For pilots, astronauts, drivers and flight controllers with their great responsibility, it is essential to avoid performance errors. Their work’s environmental factors, like stress, changes in the gravitational acceleration and time zones create, noise, light intensity, temperature are challenges for the central nervous system, leading to fatigue, work overload, circadian desynchronization, sleep loss - during airship, airplane and space exploration missions. [121-125]. A studies showed that sleep deprivation doubles error rates [14] and driving while tired is as dangerous as drunk-driving [126,127]. Dr. Mark R. Rosekind have done researches and reports for NASA on physiological and psychological effects of stressful flight operations on flight crews, and on the operational significance of these effects. "Long-haul flight operations often involve rapid multiple time-zone changes, sleep disturbances, circadian disruptions, and long, irregular work schedules. These factors can result in fatigue, cumulative sleep loss, decreased alertness, and decreased performance in long-haul flight crews. Thus, operational effectiveness and safety may be compromised because of pilot fatigue.” [128]. The researcher was looking for how to determine the effectiveness of a planned cockpit rest period to improve performance and alertness in flight operations. He found operational countermeasure in napping, that it is the best method to minimize or mitigate the effects of sleep loss, circadian disruption, and fatigue in flight operations, that can temporarily reduce stress and physiological sleepiness [129,130]. Similar conclusions he has done on fatigue of flight controllers and drivers as the Admin. of National Highway Traffic Safety Administration [131, 132] what can be very important to know how to increase focus and performance also for sports drivers like F1 or others. His research for NASA in ‘95, shows that pilots who use power naps, have a faster response time by 54%, compared to pilots who did not sleep during the day [133-135], but the power nap can not last longer than 26 min [136,137].

Astronauts have reported and complained about fatigue during missions and deficit of sleep [138]. Erin Flynn-Evans from NASA’s Ames Research Center in California’s Silicon Valley, wanted to understand how sleep environment disturbances affect the quality of astronauts’ sleep during the spaceflight. She investigated parameters leading to sleep deficiency and desynchronization of circadian rhythms, because ensuring a well-rested astronaut crew is crucial for future deep space exploration missions. [139-142]. „The environmental factors such as temperature (uncomfortably

cold or warm), noise [143,144], light intensity, elevated CO2 levels, outer space, rumination, heavy workload, vestibular changes and space motion sickness symptoms induced by weightlessness” [145] can interfere with astronauts' sleep maintenance. Apart from environment factors, astronauts during the spaceflight experienced elements of jet-lag and shift work, which are correlated with disturbed sleep architecture and circadian differences that lead to disturbances in biological processes such as: hormone production, brain wave activity (deregulation and reduced amount of REM and slow wave sleep NREM) [145-147]. The non-restorative sleep altered immune function, by reducing NK cell (Natural Killer cell), changes in fibrositis (fibromyalgia) and regeneration of cells, multiple tender points, chronic fatigue syndrome and depression [148,149]. Evidence points to the risk of performance degradation and adverse health effects associated with space exploration missions, according to NASA's Human Research Roadmap [150,151]. Pilots and astronauts are strong people but are not immune to the stress, as we know from scientific research and personal testimonials of astronauts' experiences [152,153]. How long can human perform under this pressure, fatigue and lack of sleep without opportunity for regeneration?” The author have found the solutions for pilots and astronauts and described it broadly in the science article: „Cutting edge solution for effective and safe missions - neuroarchitecture system of Vinci Power Nap® - revolution in fast stress reduction, regenerating body & mind which can help you, pilots, astronauts: before, during and after space travels” [69].

"NASA is working to make improvements that promote astronaut crew health during spaceflight.” [139]. And is interested in implementing the VPN system - specially designed environment for fast regeneration on every level of the human body.

20.05.2019 „You are genius, and I am proud to know You. NASA works well because we have people like You. You are an honorary NASA employee. I love Your concept and I hope that soon we will open Your dream's cafe in all NASA Centers. Artur Chmielewski Caltech/NASA [154].

## 5. Vinci Power Nap® well-being for humanity - the power of rest

### 5.1. Vinci Power Nap® rhythm - the discovery of stress and jet lag relief

Magdalena Filcek is an interior designer, a licensed pilot of hot air balloons and a pioneer of neurospace mechanism and the inventor of a revolutionary patented technology: the Vinci Power Nap® and Space Power Nap® neuroarchitecture system (Figure 1) and its oscillation generator for rhythms synchronization (VPN / SPN). In creating the tool allowing for reconnection of the body and mind, her expertise of aerostatics, the influence of pressure, with professional knowledge of the psychophysiological impact of interiors was very helpful.

Vinci Power Nap® —is a revolution in quick stress reduction and the best regeneration, delivered by a system of 20-min power naps [24,155-158] while swinging in a specially crafted cocoon, in a smart designed natural environment pollution-free, with silence form outside noise, disconnection from phones—all constructed to calm, relax and harmonize all six senses simultaneously (olfacoception, ophtalmoception, tactiloception, gustatoception, audioception, proprioception) [159-160][59], allowing for synchronization of breathing, heartbeat, waves in the brain with the special „maternal” frequency of 0,618Hz and 1,618Hz (regenerative delta waves) of the pendulum movement. The author’s profound research has helped understand the mind-body-environment connection through interdisciplinary interactions of all senses with: environment, the force of gravity, zero gravity position (relaxing weightlessness position) together with the frequency of the swinging rhythm and its oscillations in pressure on skin, described in detail in [50][59][69].

This innovative connection of art with science and the novel approach to neuroscience allowed her to discover solutions for: fast stress and jet-lag reduction, improvement of the quality of night sleep, feeling of safety, longevity. It is a revolution in harmonization of: endocrine, circulatory, respiratory, lymphatic and immune systems, calming brain waves and heart rhythm disorders (tachycardias), restoring homeostasis, regeneration of the body and mind, increasing energy, vitality and hormones: oxytocin, serotonin, dopamine,



**Figure 1:** Patented design interiors of neuroarchitecture of Vinci Power Nap® and Space Power Nap® with human experiencing zero gravity position [69].

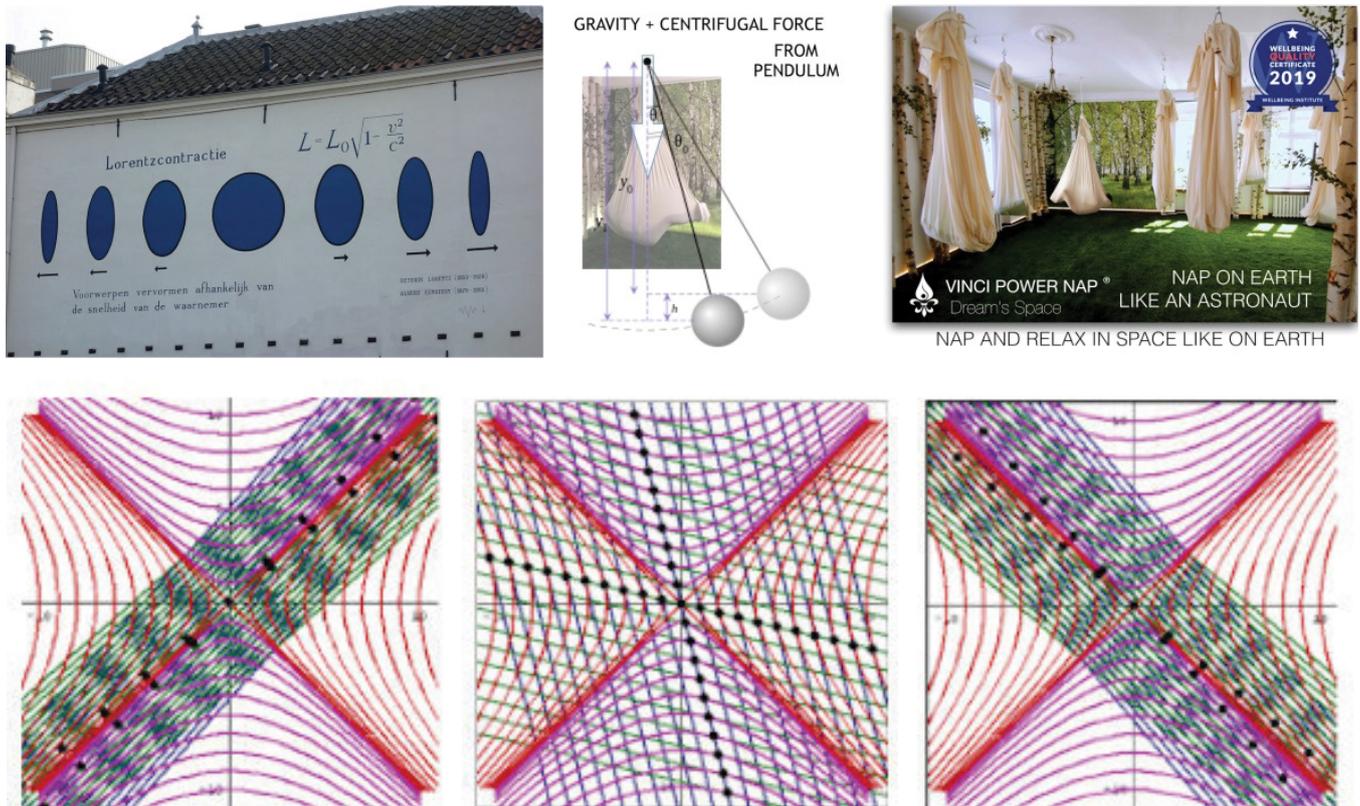
etc., as prevention and help in the treatment of overtired, burnt-out, traumatized, depressed, insomniac people, also for Alzheimer's, Parkinson's disease, etc. Neuroarchitecture of VPN is a helpful tool for understanding of the vestibular, sematosensory and neurobiological integrations, inter-organ communication in homeostasis and disease, the complexity of internal body clock architecture with surrounding us time as a frequency, following an experimental representation of Lorentz's Transformation, described broadly in the article in Journal of Biotechnology and Biomedicine Journal „Frequency of Harmony ....”: [68]. (Figure 2).

### 5.2. Stretching, contracting, gravity and electromagnetic wave

Following Einstein's concept "Non-destructive wave compression is the source of gravity [164], which is not a force, but the result of a distortion of space-time. This stretching, caused by mass and energy, distorts space-time and alters the motion of objects, causing them to curve along with a space-time distortion that is nothing but normal compression and stretching." [165-170]. The author's discovery described in [68] assumes that the frequency of harmony (found in VPN pendulum swing frequency) is the number of the golden ratio Phi, which has two representations 0.618 and 1.618, the pulsations of their oscillations 0.618Hz

and 1.618Hz (both of which occur between heart contraction and relaxation, relaxation and contraction) alternating from a small "phi" to a large "Phi", creating an impact on the state of movement. It describes the phenomenon of electromagnetic wave compression-tension and wave acceleration, creating a three-dimensional geometric fractal in space that pulsates creating each other endlessly - to infinity, as heart beat. The effect of these fluctuating movements or motions, can be the induction of gravity, which can interact with physical bodies and help build them, having the impact on their shape and neurobiology through the rhythmic expression of many genes [90]. This endless movement justifies the creation of the torus as well as the Fibonacci spiral - which is found in the macro-scale of the shape of galaxies, in black holes, through the arrangement of life forms on earth to the structures of crystals on the micro-scale. "An electromagnetic wave can be generated by an accelerating charge particle" [171]. „If its frequency of oscillation is f, then it produces an electromagnetic wave with frequency f. The wavelength λ of this wave is given by λ = c/f. Electromagnetic waves transport energy through space." [172].

The body laying in the zero gravity position, suspended on a elastic material, acts like a pendulum oscillator, swinging rhythmically back and forth under the influence



**Figure 2:** 2.a: Formula of Lorentz contraction on a wall in Leiden, NL [162], 2b: VPN with properties of a moving pendulum, 2c: Vinci Power Nap® calming interior [68], 1d: Freeze frames from an animation of Lorentz transformation [163], showing similarity to the behavior of the VPN material during swinging back and forth with the body inside.

of gravity and centrifugal force (experiencing oscillations of microgravity and hypergravity [69]), electromagnetic field, pressure fluctuations on skin increases stimuli sensory receptors (exteroceptors and mechanoreceptors) on physical, biological, chemical and ions levels, particularly Ca<sup>2+</sup> and K<sup>+</sup> (changing the probability of ion-channel on/off switching events by membrane magneto-mechanical stress) [173]. Many published articles show that electromagnetic fields can interact with the body at a biophysical level, and can act like activators or blockers of cell receptors [174,175]. For example the blockers can appear during an airplane flight [176] „not only is EMF radiation emitted from all the electronics on board, but flying also exposes to higher levels of cosmic radiation than while on the ground, the longer is flight, the longer is exposition as the radiation is then being contained and therefore magnified within the airplane due to the Faraday Cage Effect” [177], which is further amplified by rapider aircraft travel from west to east by influence of the Coriolis force, the west-to-east rotation of the Earth [178-180]. „The Center for Disease Control and Prevention even classifies airline crew members as radiation workers.” [177] and project ICEMAN [181]. The characteristic reaction to electromagnetic radiation consists in tightening the fascia surrounding the muscles, which in turn causes biochemical failure of the body, in particular - disruption of the functioning of cell membranes.” [182], this compression (pressure) on tissue can lead to activation of mast cells to release histamine, which in consequence can make clots in the veins, headache, tiredness, sleep disorders and other symptoms of jet lag. There is a huge progress in understanding chemical and mechanical aspects of cell and tissue "which show a correlation between the presence of electromagnetic field (EMF) gradients and cellular reactions, such as studies in embryology, physiology, as well as in molecular biology, showing the link between the clear-cut causal explanations of physics and the observed cellular, organic changes”[183] with clock circadian oscillators [99][184] in plants and mammals [185]. „Alternating low-frequency electromagnetic field can change the spin of ferromagnetic atoms, leading to a change in the properties of some substances, such as enzymes that can accelerate enzymatic reactions. Each human cell has its own electromagnetic field. No reaction will occur in the body without the exchange of electromagnetic forces (e.g. muscle contraction). The external electromagnetic field can have a positive or negative effect on the human body depending on its frequency and intensity. The electromagnetic field of very low frequency (1-80 Hz) has a positive effect on the body, accelerating enzymatic processes, relaxing smooth muscles, faster regeneration of damaged cells and changing their structure for example increasing bone tissue density” [185] [186], it shows that VPN can be revolution solution for human space missions - to prevent losing bone density in space by astronauts and help to recover after it, as „lack of gravity and weightlessness means the longer astronauts stay in space, the

more bone mass they lose” [187]. „Low-frequency pulsed electromagnetic fields are often used for various therapeutic purposes. Many sources confirm that under the influence of therapy with such a field, positive changes in the activity of some enzymes and biochemical processes can be observed.” dr hab. eng. Lukasz Szymański, prof. Polytechnic in Lodz [185]. „An active hydrodynamic fluctuations background might affect acceleration of enzymatic catalysis” [76] as „the activation energy for the reaction is less in the presence of the enzyme than in its absence, and accordingly that the reaction would be speeded up by the enzyme” [76]. For example, it can accelerate the DAO enzyme, which neutralizes exogenous and endogenous histamine released from mast cells activated by environmental factors, and together with antihistamines, to help prevent and reduce inflammation as well as its symptoms. The author hypothesizes also that the enzyme DAO, antihistamines and VPN sessions may, among other things, help to prevent the body from rejecting transplanted organs [188], prevent and cancer treatment as H1-antihistamine treatment enhances immunotherapy response [189]. Identifying the reset mechanism of the internal oscillators, frequency of hydrodynamic, and the body's interaction with the external environment thanks to VPN system may help to better understand circadian biology, providing insight into more general aspects of controlling biophysics, biochemistry, transplantology, neurobiology and space medicine.

### 5.3. The power of swinging as Vagus Nerve Stimulation - like in a mother's arms

Environmental pollutions, working and living conditions can lead to chronic stress, during it the sympathetic branch of the autonomic nervous system begins to dominate. This autonomic imbalance between sympathetic and parasympathetic branch leads to reduction of optimal bodily functions and makes people more vulnerable to illness, trauma, and faster aging. Vagus nerve stimulation helps rebalance the autonomic nervous system and shift the body and brain to a more optimal state of being, living, and acting. The vagus nerve controls inner nerve center—the parasympathetic nervous system and is the longest of the cranial nerves. And it oversees a lot of crucial functions and body-brain connections, communicating motor and sensory impulses to and from every organ. The activation of the vagus nerve can prevent inflammation, helps to breathe, control heart rate, initiates relaxation after stress, helps in gut-brain communication, helps make memories (polyvagal theory) [190]. "Vagus nerve stimulation has created a new field of medicine, as recent researches has revealed that it may also be the missing link to treating chronic inflammation.” [191]. Everyone likes VPN rocking, like in a mother's arms - but people with labyrinthine disease can participate in VPN sessions without rocking, because rocking is not pleasant for them [59].

#### 5.4. Benefit for travelers, pilots, astronauts - hotel and airport improvement

To perform better on a holiday or on a business trip, especially when the time zones were crossing, to avoid symptoms of jet lag it and increase energy for life - it is recommended to perform a 20-minute Vinci Power Nap® session as soon as possible after arrival - to reduce travel-related stress and harmonize the internal rhythm with the rhythms at the destination [192]. The VPN system can be implemented at any airport and in the best hotels. VPN as a cutting-edge tool can bring new value in prevention of human performance risks during travels around the world connected with stress reduction and changes in circadian rhythms, also for safer space exploration missions. The VPN system can provide recommendations in interactive design for: sleeping conditions in hotels, jet lag reduction rooms, well-being in the office of the future, aerospace engineering to optimize elements of the spacecraft sleep environment during missions to Mars, in pace habitats on the Moon and Mars (up for “day-time” rest the author would also propose design of VPN heart beat frequencies pressure cocoon, and for “night-time” a suit or quilt with compressed air which exerts gentle pressures the human body, with proper frequencies, as it is in mother womb on Earth) [69]. During and after the space trips, the equilibrium fluctuations of body, in electromagnetic field with a very low, frequency like in VPN (0.618 - 1.618Hz) can accelerate faster regeneration of damaged cells and change their structure for example: increase in bone tissue density [187]. These discoveries of VPN properties can bring innovations to the foundations in: sleep medicine, aviation - space medicine, space psychology and neuroscience. Part of the VPN system ( the generator of oscillations) is already installed at the Analog Astronaut Training Center and is used by sleep deprived analog astronauts [18]. 05.12.2022 “Space experience and rest in one! Dream Cafés should conquer the world. Wishing you the conquest of Earth, Space and other planets!” A.Elwertowska Analog astronaut.

#### 6. The Review from Researches, The Subjects, Methodology and Results

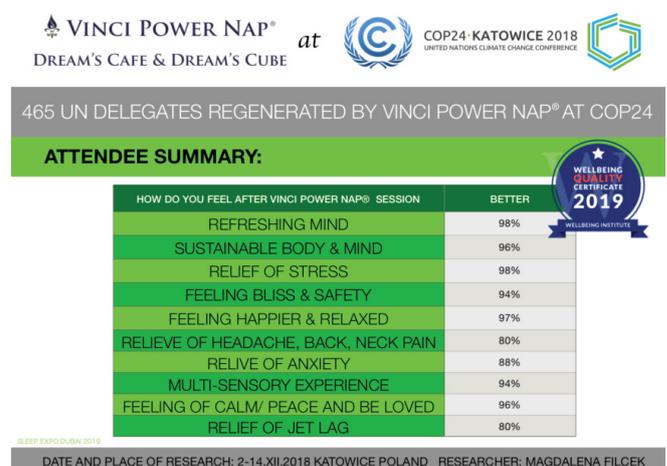
The review from interdisciplinary researches provided by the autor in period of time between 12.03.2018 and 31.12.2022 on different groups of hundreds of participants showing the impact of VPN sessions on multi - levels of human body and mind systems. Some of the research was done through laboratory blood tests, mind performance and treadmill exercise tests, doctors and psychologists deep interviews, measurements of: sleep/pulse/brainwaves/heart and HRV with special devices, the others were conducted through survey, feedback and observation. Participants were also adults and children.

#### 6.1. Stress and jet lag on Climate Change Conference COP24 2018 - survey

The author examines the experience of people, 465 UN Delegates who came for 14 days as negotiators for the United Nations Framework Convention on Climate Change COP24 in Poland from all over the world, also in the sense of jet lag reduction after a session of relaxation in the VPN system. There were 465 UN beneficiaries (277 women and 179 men), from 58 countries. The age range was from 15 up to 72 years. People between 20-40 years old were the biggest group of participants with prevailed numbers of women, but in the group of 40-50, 60-70 years old the men dominated, with almost equal amount of both sex in the group 50-60 years. After the session participants filled out surveys whose qualitative data analysis revealed that VPN sessions had a significant, impact on reducing the feeling of the effects of jet lag in 80% of the cases, the feeling of fatigue resulting from traveling and changing time zones has decreased, relief of stress 98%, refreshing mind 98%, bliss and safety 94%, sustainable body & mind 96%, happy and relaxed 97%, relieve of headache, back, neck pain 80%, relieve of anxiety 88%, multi-sensory experience 94%, calm/ peace, be loved 96%. (Table 1). The complete survey methodology of research and VPN positive impact is describing in [59].

#### 6.2. UNICEF project - for woman and child with war trauma - sleep and stress

The 300 VPN sessions for 127 beneficences of the UNICEF project for woman and children as refugees from Ukraine with war trauma, 146 filled survey, 125 people felt reducing level of stress 86%, 127 felt increase of safety level 87%. The participant reported also improvement of better sleep: 18.12.22 „I came from Ukraine in November 2022. I learned about VPN from the UNICEF program for refugees. During sessions, I and my mother felt calm, rest, comfort.



**Table 1:** Results of surveys from 465 UN Delegates on COP24, source: [59]

From the 5th session, I began to notice the impact on my sleep, which I had problems with for many years. The time to fall asleep has been shortened, and the quality of sleep has also improved. I slept better than usual yesterday. I woke up once, then managed to fall asleep again and sleep until morning. Before, I couldn't fall asleep after waking up. I also felt calm and relaxed with inner harmony and overall calming in the body during the day. Elena” 22.11.2022 ”Thank you for helping my mother. We see positive changes in her that were difficult to achieve other ways.” 26.11.2022 ”I come with my 7-year-old son. During the session, he falls asleep in the first 10 minutes. He sleeps soundly. These sessions are very good for him, because he becomes less crying, more resistant to stress. About myself, I can say that when I lie down to the cradle, I have a smile on my face in anticipation of a pleasant procedure. My son asks to come to you all the time, to go through the whole course. Irina” 30.10.2022 ”When I came to the session, along with entering the spiritual level, I felt calm. Emotions even after the first session - fantastic. At this moment you are just: You - and peace, You - and emotions, You - and control of your soul. You start to think that during the session the whole world is waiting, time has stopped. You have time to feel your true emotions, reduce your stress level. It is very important to pay attention not only in the aesthetic sense, but also in the psychological sense. I am very happy that therapies such as Vinci Power Nap® exist, thank the Universe that I came here and felt what I have been waiting for a long time. Svetlana” 15.11.2022 „I would recommend these procedures to anyone! Because we are all under stress every day, it all depends on how we perceive stressful events. This is a wonderful invention! Alla” Ukraine.

### 6.3. Stress, sleep patterns in pilots, analog astronauts and soldiers with PTSD

**Analog astronauts:** „Analog Astronaut Training Center, confirms that the oscillation generator as a part of the Vinci Power Nap® system is used by sleep deprived analog astronauts as part of their daily routine in the habitat.(...)” Dr A. Kolodziejczak [18].

**International balloons pilots:** visited VPN showroom in Wroclaw (Table 2).

**Soldiers with PTSD:** from 10th BkPanc of Polish Army sent by Ministry of Defense, and special forces GROM.

Soldier 39 years old, after mission in Afghanistan war, wrote: 11.06.2020 „I am a veteran injured with a mental health impairment (PTSD) and physical injury related to serving overseas. My health is unstable and has recently deteriorated (insomnia, nightmares, fatigue, recurring thoughts, fears, etc.). I would like to ask you for help in the form of the opportunity to participate in a two-week VPN therapy that would help me recover. (...) Yours faithfully P.K.”

During the study conducted with 10 days of VPN sessions,

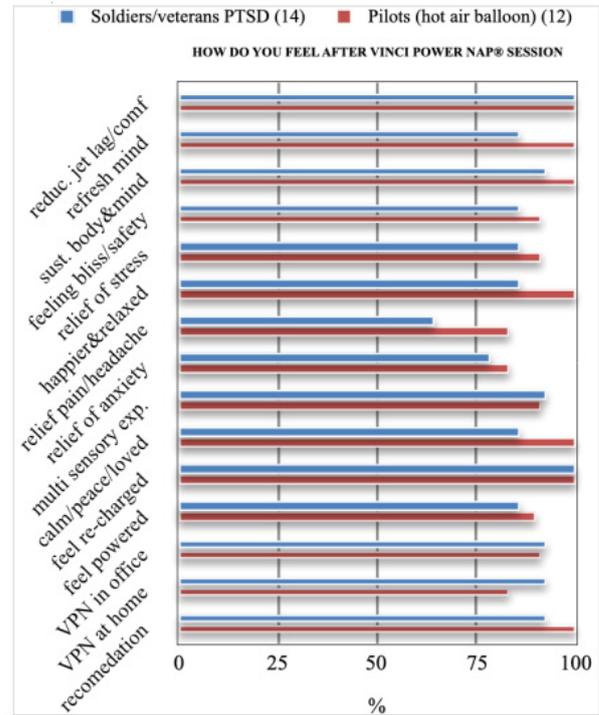


Table 16. Results from survey after VPN session in the group of soldiers with PTSD (14) and pilots (12)

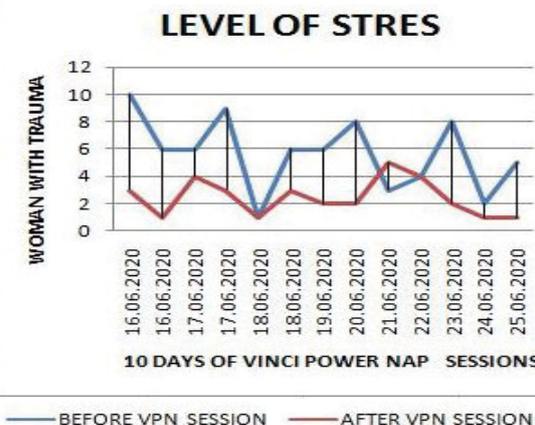
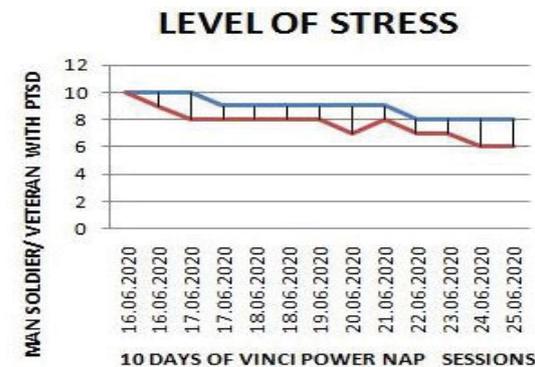


Table 2: Survey results after VPN session from pilots (12) and soldiers with PTSD (14), levels of stress reductions after VPN sessions, source: [69]

the aforementioned participant experienced 2 nights without waking up (what was not possible before) and an increasing the quality of refreshing sleep, reducing the sense of one's own stress level from 10 to 6 for a soldier with PTSD and from 10 to 1 for a traumatized woman after 10 VPN sessions and a visible reduction in stress after each VPN session. More info: [50].

The doctor Wojciech Kucharski from Centrum Serca Lumina Cordis Clinic in Wrocław - sleep report from polysomnograph study shows increase comparing research made on 17.06.2020 and 26.06.2020 - „the lever of REM from 20,13% to 22,45% and deep sleep from 17,56% up to 18,19%. During the test, a slightly increased RDI (9,3) was recorded with correct AHI (3,2) and ODI (2,8). The results is a straightly increased respiratory effort. No sleep apnea recognized. Central apnea does not occur. Light sleep dominates. % of REM sleep is correct”, after 10 VPN sessions. (Figure 3).

### Feedback from soldiers with PTSD after Vinci Power Nap® sessions:

8.11.2020 "Dear Magdalena I would like to thank you for your commitment and all actions and help shown to me. Two weeks of stay in Wrocław related to the innovative Vinci Power Nap® project clearly changed my state of well-being and health. Thanks to Vinci, I was able to synchronize my thoughts with my body. The quality of my sleep has improved, thanks to which I function better every day, I fall asleep and wake up with fewer thoughts in my head. Initially difficult days slowly turned into a more stable time (I wrote about it in my diary and before/after sessions). I also noticed that I am more subdued and calmer. My heart rate has also slowed down and my resting heart rate, especially at night, drops to an average of about 50 bpm or lower (I look at the data from my watch). I feel more relaxed overall. I started training again, which gives me pleasure and moments of escape from tormenting thoughts. The impressions that flowed through me during our sessions were positive (except for the first session, which I experienced very clearly - I wanted to run away and then I experienced incredible sensitivity to smells). With each subsequent nap, I had the impression of an additional impulse of calm, and my thoughts seemed unable to pile up excessively. And this dream - its change to " + " which still persists. I am generally more sleepy (as if the body wants to rest more). Later, flavors appeared - more and more distinct and better. I reduced the use of salt in food (I did not use sugar before). I still have a good appetite. My everyday life seemed to slow down (I feel like it) and I managed to catch my breath for a while. This state (as described above) persists all the time. Although the head is still full, the discomfort is acceptable. I hope that my feelings and what is happening to me has a positive reflection in all the tests that have been performed. Thanking you again for your boundless help for me and I think that for all injured veterans, veterans, soldiers

or officers and every person "experienced and tired" through life, I wish you and myself that this first "moon step" will become a source of for anyone looking for rest, peace, stability in a fast-paced and uncompromising world. Vinci Power Nap® helped me relax temporarily and drift off, which improved my overall well-being and sleep levels, I function better every day. It seems to me that I am getting a better balance of life."With deep respect. P." 05.12.2019 "Small Step for Man - Big Step for Mankind" by Neil Armstrong The method seems simple - but it exudes genius - it is an expression of the development of civilization." In today's crazy world, it is an art to stop and calm down - even for a moment. Thank you for a moment of relaxation and moving us after hardships and mission experiences to the World of Silence, Relaxation and Safety. Veterans and soldiers of the 10th BkPanc" attending on VPN sessions with psychologist and veterans doctors. 20.11.2022 „After first session on 06.11, the feeling of relaxation and regeneration persists two weeks later still high focus nad energy level, fast regeneration." J.K. from GROM.

### 6.4. Heart beats: COP 24, soldiers, woman with trauma, end users

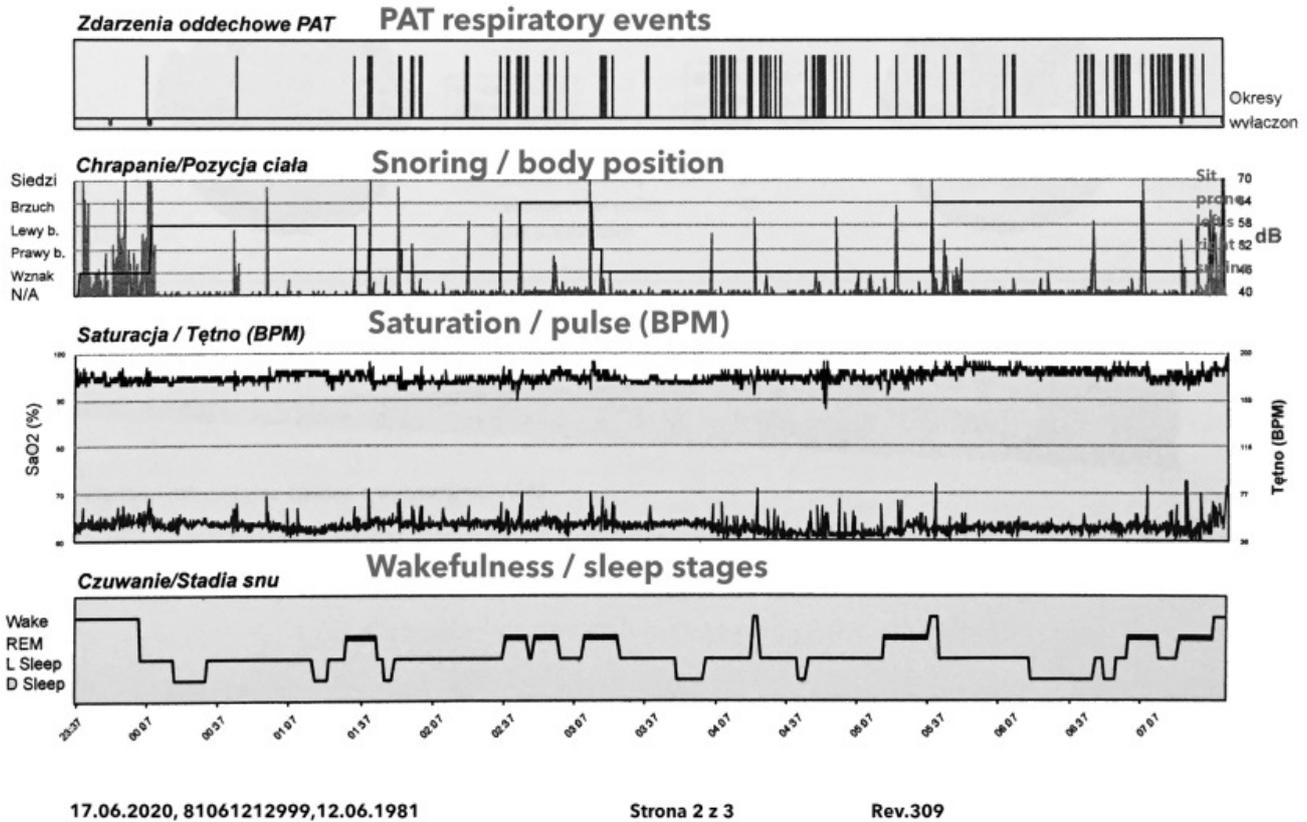
After 10 VPN sessions the results of Holter research: for the man with PTSD - the HR MID measured on 17-18.06.2020 showed decrease from 63 to 60 points on 23-24.06.2020 and the amount of tachycardia from 19 to 8, also the treadmill exercise test demonstrated improvement in reaching target HR from 12,149min up to 16,153 min. For the woman with trauma - the HR MID measured on 15-16.06.2020 decreased from 88 to 80 points on 23-24.06.2020 and the amount of tachycardia from 1146 to 382, also the treadmill exercise test demonstrated improvement in reaching target HR from 4,146min up to 7,147 min. More in [50]. (Table 3).

Pulse oximeter heartbeat measurement of 176 participants at COP 24 and on the Samsung Health app on a woman experiencing VPN for the first time. The woman had big problems with sleeping before, after this session the next day she wrote a comment: 26.06.2022 "I slept 6 hours after 1 VPN session without waking up and I'm glad because I couldn't sleep more than 4 hours every night for many months" 06.08. 2021 "I noticed a strong sedative effect and slept very well at night, sleep was clearly better than last week." (Figure 5).

### 6.5. Brain waves and breathing: increasing delta waves during the VPN session

The delta and theta brain waves increased during 20 minute VPN sessions, measured by the neurobiofeedback device, for a soldier with PTSD and for a woman with trauma ( Table 4). During the first seconds of rocking in a VPN session, one of the most beautiful sounds that can be heard when forgiving yourself comes out almost every time - it's an exhalation combined with a sigh. A sign of forgiveness, reconnection, acceptance, security. After such a special sigh, it appears to

pRDI/pAHI are calculated using oxi desaturations  $\geq 4\%$



pRDI/pAHI are calculated using oxi desaturations  $\geq 4\%$

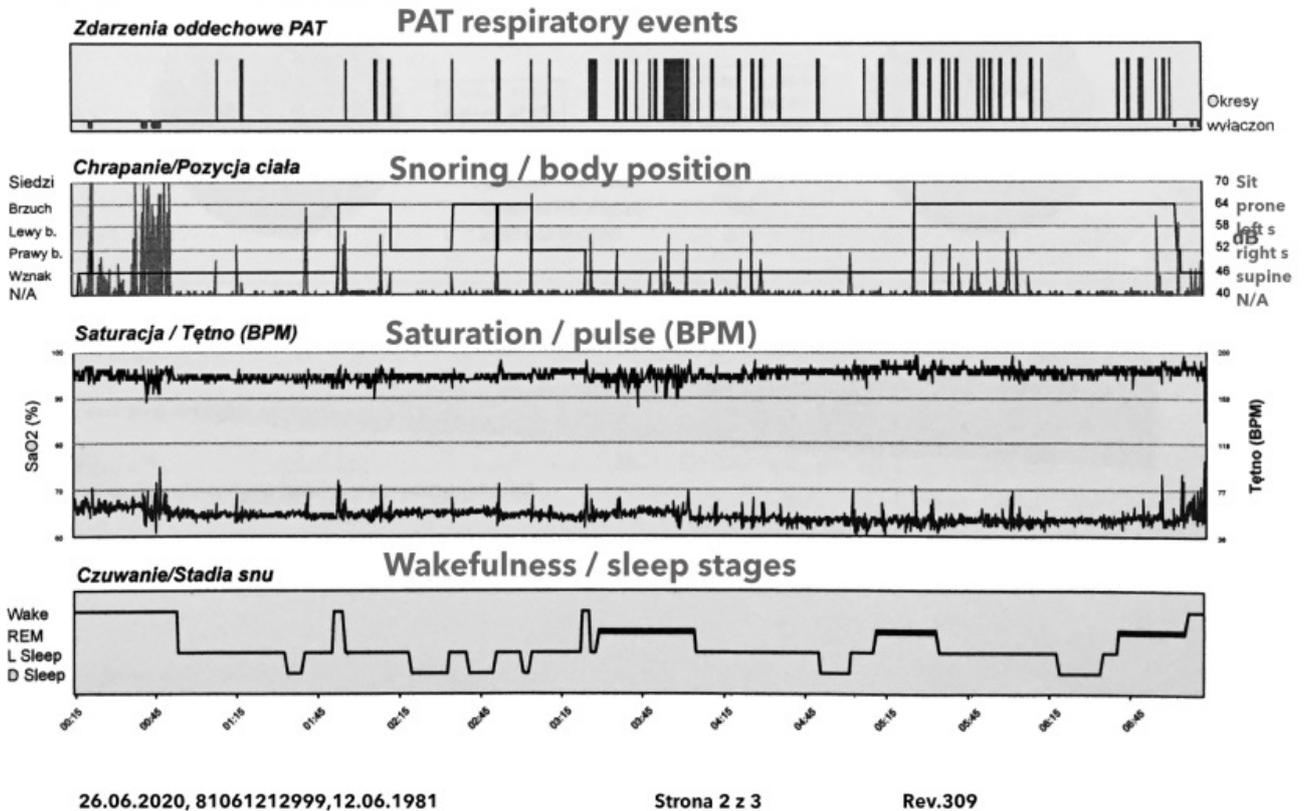


Figure 3: Polysomnograph measurements of sleep on soldier with PTSD - two nights.

RESEARCH	MAN SOLDIER/ VETERAN WITH PTSD	18.06.2020 /23H	23-24.06.2020
HOLTER EKG	HR MID	63	60
	HR MIN	46	44
	HR MAX	122	103
	THE AMOUNT OF TACHYCARDIA	19	8
TREADMILL EXERCISE TEST	TIME TO REACH TARGER HR	W 12 MIN 149 W 14 MIN 161	W 16 MIN 153
POLYSOMNOGRAPHY	% REM	20,1	22,5

RESEARCH	WOMAN WITH TRAUMA	15-17.06.2020	23-24.06.2020
HOLTER EKG	HR MID	88	80
	HR MIN	68	64
	HR MAX	158	143
	THE AMOUNT OF TACHYCARDIA	1 146	382
TREADMILL EXERCISE TEST	TIME TO REACH TARGER HR	W 4 MIN 146	W 7 MIN 147

**Table 3:** Results of holter measurement and treadmill exercise test done on soldier with PTSD and woman with trauma, by cardiologist Dr Ewa Sokola-Wysoczanska from Centrum Serca Lumina Cordis Clinic in Wroclaw. Source: [69]

lead the body's to ability to heal itself, with rhythmic inhalation and exhalation synchronized with the rhythm of the VPN. (Table 4).

### 6.6. Hormones increasing after VPN sessions

Oxytocin (69,85pg/ml-95,38pg/ml W), (37,94pg/ml-35,18pg/ml and after one month increased to 87,52 M), (21,16pg/ml-48,77pg/ml C) [69]. Dopamine (150-211pg/ml M), (201-222pg/ml W), more results of other hormones are in study: [50]. (Figure 6).

### 6.7. Warsaw - Tokyo travel, jet lag experiment

The author experimented while traveling from Warsaw to Tokyo, where many people from all over the world came for 7 days for a study tour and the Silver Eco Award and were accommodated in the same hotel. Shortly after landing, the author, taking a taxi from the airport, asked to stop near the park and hung the VPN on a tree to take a 20-minute nap while swinging. During entire stay in Tokyo, she felt no jet lag at all, while all the other conference attendees complained of severe time-zone symptoms throughout the week. The only difference was the VPN session right after arrival. The taxi driver, intrigued by the VPN system, also decided to participate. He reported immediately feel the security of being in mother's womb, and within a minute felt asleep with dissipation of any feelings of exhaustion and overworking from driving all day. (Figure 7).

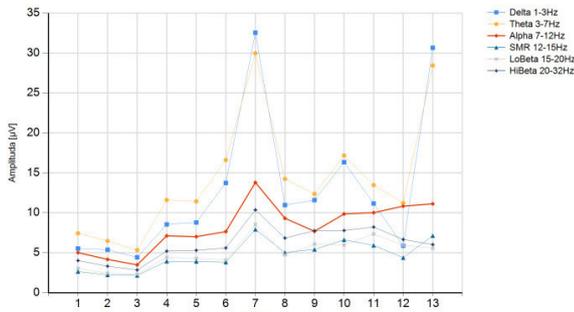
### 6.8. Example of harmonizing sleep patterns also for children and newborn babies

Here are also in-depth examples of harmonizing sleep patterns in children, such as a 1.5-year-old who suffered from loss of sleep at night (10 awakenings per night) with also loss of naps during the day and together with the child the 28-year-old mother also suffered. With each VPN session there was an improvement, and after 5 VPN sessions everything was back to normal sleep patterns (without waking up at night) and daily regeneration time for the child, and thus for the mother, as a consequence, the quality and joy of life of the whole family of 5 increased. Describing below:

22.11.2022 "I am a working mother of three children. I have been sleeping very little for a year, because the youngest daughter is just 1,5 year old and has a lot of problems with sleeping (about 10 wake-up calls at night, she falls asleep for a long time about 40 minutes)". After VPN session: "I am delighted with VPN! The little one fell asleep in 4-5 minutes, this is her life record. An unusual and deeply relaxing experience. Smells, sounds, body position that brings relief to the burdened spine. All this creates ideal conditions for sleep. Proximity and peace certainly also have a positive effect on our relationship. Usually, after waking up, Janeczka cries and recovers for a long time at home. Here she is calm and relaxed after a nap, she is not crying, she is smiling :)" 28.11.2022

**Table 4:** Results of brain waves of man and woman, before, during and after Vinci Power Nap® session. Source: [69]

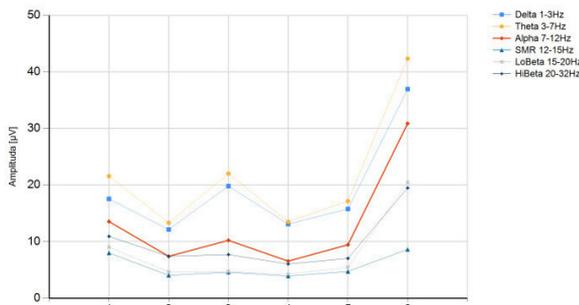
SESJA 4 21.06.2020	MAN		Długość: 26	Rundy: 15	Punkty: 1548	
Zakres fali EEG	Delta 1-3Hz	Theta 3-7Hz	Alpha 7-12Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średni wynik sesji	12,7	14,3	8,2	4,7	5,0	6,1



Runda 1	Długość: 2		Gra: 1	Punkty: 125		
Zakres fali EEG	Delta 1-3Hz	Alpha 7-12Hz	Theta 3-7Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średnia wartość progu		13,10	1,70			6,67
Średni wynik rundy	5,5	5,0	7,4	2,6	3,0	4,0

Runda 13	Długość: 2		Gra: 1	Punkty: 54		
Zakres fali EEG	Delta 1-3Hz	Alpha 7-12Hz	Theta 3-7Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średnia wartość progu		35,35	3,60			8,92
Średni wynik rundy	30,7	11,1	28,4	7,1	5,6	6,0

SESJA 8 24.06.2020	WOMAN		Długość: 12	Rundy: 15	Punkty: 373	
Zakres fali EEG	Delta 1-3Hz	Theta 3-7Hz	Alpha 7-12Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średni wynik sesji	19,2	21,7	13,0	5,6	8,1	9,8



Runda 1	Długość: 2		Gra: 1	Punkty: 45		
Zakres fali EEG	Delta 1-3Hz	Alpha 7-12Hz	Theta 3-7Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średnia wartość progu		31,01	5,64			17,36
Średni wynik rundy	17,5	13,5	21,6	8,0	9,0	10,9

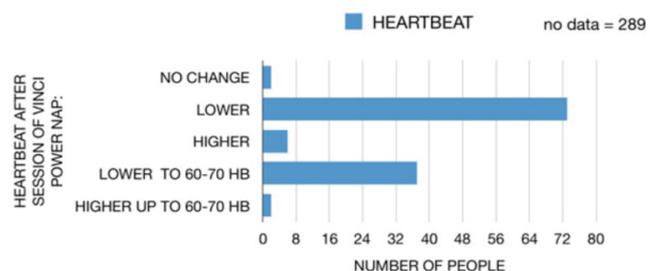
Runda 6	Długość: 2		Gra: 1	Punkty: 7		
Zakres fali EEG	Delta 1-3Hz	Alpha 7-12Hz	Theta 3-7Hz	SMR 12-15Hz	LoBeta 15-20Hz	HiBeta 20-32Hz
Średnia wartość progu		30,58	3,81			13,47
Średni wynik rundy	37,0	30,9	42,3	8,6	20,5	19,5

- "Continuation after the first session in VPN, my daughter started to sleep during the day. This makes her happier and calmer in the afternoon. The number of night awakenings has also slightly decreased, and falling asleep after waking up in the night takes less time. For me, this is a big breakthrough when it comes to sleep. Thank you! At today's session, Janka fell asleep in 30 seconds! Extraordinary!" 29.11.2022 "After two sessions in VPN, for the first time my daughter slept peacefully at night. She had only one wake-up call. There were also no problems with falling asleep. Clearly, a nap in the VPN helped her find her balance and sleep rhythm. Janeczka is very happy when we enter the space of the VPN. She is happy when we lie down together in the hammock. He

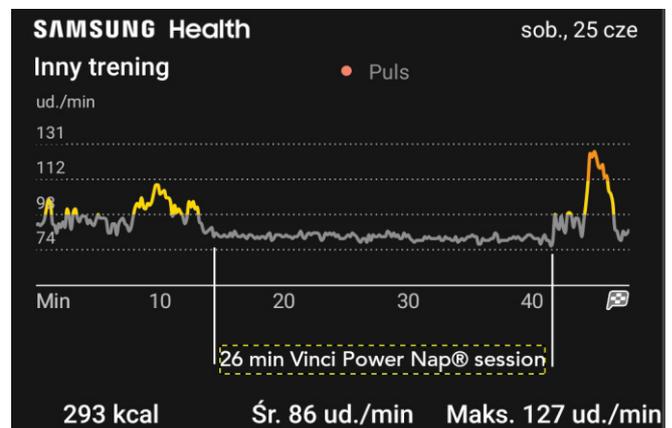
cuddles up to me and falls asleep quickly - it's a fundamental difference between falling asleep at home." 30.11.2022 "Quick and restful sleep. After 3 sessions of VPN, we have another good night's sleep! 1 wake up call instead of 10. Falling asleep in the evening takes 15 minutes instead of an hour." 01.12.2022 "Behind us are already 4 naps in VPN and another night of sleep. One wake up around midnight, fall asleep quickly and sleep soundly until morning. The change in mode of operation is evident. My daughter is also calmer during the day, she is not fussy, she is more willing to play alone (before, she was reluctant to undertake any activities without me). VPN Naps are not only a benefit for my daughter. I feel regenerated, less nervous, I don't have problems falling asleep (which ironically was common when I woke up often and slept little). Thank you." 02.12.2022 "Today, Janeczka slept all night from 8pm to 6am without any wake ups, and after 6am she slept with me until 8am." 03.12.2022 "Thanks to the sessions of VPN, the first night of sleep (without awakenings) is behind us. The daughter sleeps during the day, the nights are calm, we come back to life." 13.12.2022 "Despite her illness, Janeczka slept all last night without waking up. It also helps her a lot in functioning during the day. Our daily rhythm is stabilized and I am very



465 UN DELEGATES REGENERATED BY VINCI POWER NAP® AT COP24



DATE AND PLACE OF RESEARCH: 2-14.XII.2018 KATOWICE POLAND RESEARCHER: MAGDALENA FILCEK



**Figure 5:** Heartbeat measurement of 176 UN Delegates on COP24 [59], and end user.

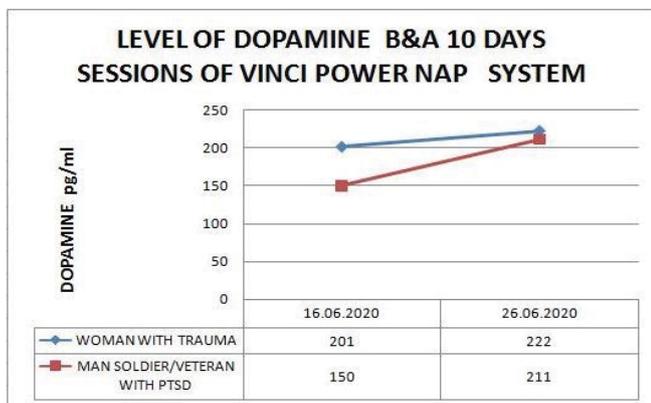
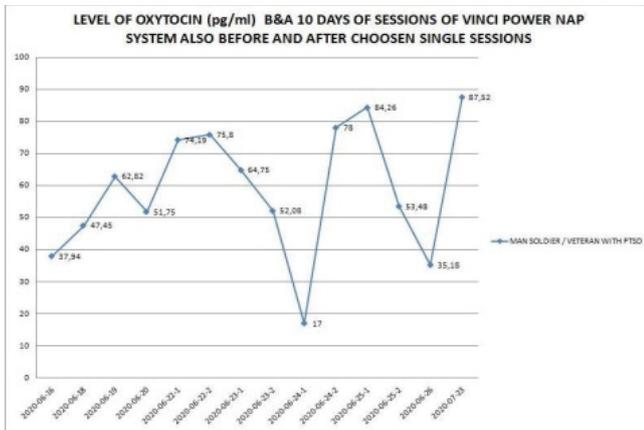
happy.” 10.01. 2023 "Tonight was a wonderful night - for the first time she slept until 7:15 without a break. I also noticed that when she sleeps more than 1,5 hours during the day, she has one wake-up at night, and if she sleeps about 1-1,5 hours, it is a quieter night with no wake-ups.” Our sleep therapy seems to be working brilliantly. Thank you! Marta Maj” More science and discovery solution of VPN for newborns are in article: [50].

### 7. Conclusions from top doctors in Sleep Medicine, scientists and end users

20.03.2019 „Wellbeing Quality Certificate for Magdalena Filcek, the creator of Vinci Power Nap® - an innovative method of calming and regenerating one’s body and mind during daytime. By reducing stress, anxiety and tension and boosting energy and creativity, Vinci Power Nap® significantly restores balance and improves overall wellbeing of its users.”A. Czerkawska CEO Wellbeing Institute. **23.05.2019** „Magda - You have created a unique sensory environment that enabled me to totally relax, sleep deeply, and awake fully refreshed after only 26 magic minutes. Your idea must be translated into a global movement that helps everyone - young and old to unite mind, heart, spirit and body. Prof. P. Zimbardo - Stanford University USA California. **25.10.2019** “(...) After VPN session I managed to



**Figure 7:** VPN session in a Tokyo park by the author exhausted by the long flight from Warsaw and a tired Tokyo taxi driver. 20 min nap while swinging in VPN cocoon.



**Figure 6:** Oxytocin and dopamine levels before and after VPN sessions, source [69]

free myself from all physical and mental tensions, what confirmed my belief in the uniqueness of this method, not only as a place to take a nap, but generally as a way to achieve quick and deep relaxation.” Dr M.Skalski, Sleep Medicine Specialist, Sleep Disorders Treatment Clinic, Warsaw Medical University. **01.07.2020** „(...) As a front line COVID warrior, I would like to strongly recommend to establish Vinci Power Nap® in each hospital to reenergize HCPs (Healthcare providers) to revive from mental and physical fatigue so then can do work afresh with full energy and heal.” Fragment of letter to WHO and UN from Dr Vats Mayank, Senior Specialist, Interventional Pulmonologist, Intensivist & Sleep Physician, Rashid hospital, Dubai Health Authority, UAE. **10.06.2022** „Your Vinci Power Nap® project could potentially be a part of that center once is established - Intrepid Spirit Center-Invisible Wounds Center at Eglin AFB” Dr J.Koberda Neurologist/Neuromodulation/QEEG/Brain mapping Department of Air Force Headquarters Florida. **27.03. 2019** “For the first time in many years, I felt peace, relaxation and an amazing feeling of being rested after such a short time. A fantastic idea in line with nature and the body's natural need for a nap. R. Juchniewicz Head of the Pedagogical and Psychological Counseling Center of the

Vilnius Region Lithuania. **07.07.2020** "It's great to try for any type of sleep disorder." Dr L. P. M. Klim, Bayern. **25.07.2018** "Focus and relaxation. Presence and deep sleep. Action and rest: they are not opposites, but complementary. This means that one cannot exist without the other. So let's take care of ourselves, because then it's easier to take care of others." A. Poraj - ZEN Master "Empty Cloud". **10.01.2019** "Withdrawal of the senses - a priceless feeling. Regeneration on many levels" Association of Space Relaxation Techniques. **18.02.2019** "Thank you for the unique moments of sleep that I have never experienced before ... peaceful without waking up and without fear. Absolutely gorgeous design and a place full of good energy." Eve. **18.02.2019** "Unique sensations, penetrating every cell of the body, giving a sense of completeness and security as in a mother's womb. No description can describe this feeling." Witold, sound therapist. **30.07.2018** "Thank You Magdalena for this amazing relaxing experience on the heart of Wroclaw! I'll be delighted to come back for more very soon and to ensure that Google enjoy the same experience :) A. Reveiller Well-being lead, Google Wroclaw. **27.02.2019** "Highly impressed by the unusual space installation and weightlessness experience, I envision the development of this unique form of therapy leading to the dissemination of well-being and all prosperity." prof. M. Jędrzejewski Academy of Fine Arts Department of Interior Design, Wroclaw. **16.05.2019** „It was a special session for me swinging in zero-gravity environment. To connect body to space, enable me think about our life, space and the Earth. Thank You so much for a special experience. ARTSAT Project ( Art and Satellite) A. Kubota, Tokyo, Japan. **17.07.2019** „It is the future! It will become an integral part of city urban planing in a decade from now. It's absolutely amazing, every little detail is well thought and based on science. I love it - I didn't feel like getting out of it. Brilliant, genius concept by an amazing, smart and creative lady!" R. Sawan, Medfront Healthcare, Dubai. **11.08.2019** „Great job, Your understanding of physiology of sensory input and the impact that has on the autonomic nervous system puts most doctors to shame. I see a great future for Vinci Power Naps. Well done." PC Anesthesiologist M.Kulisiewicz, Australia. **02.12.2022** "Thank you for the relaxation. It is like a restart!" K.Kraydruk Psychiatrist Ukraine. **17.07.2018** „In the information chaos of everyday life, VPN gives a return to elementary human needs and all this in great accordance with the latest science." I.Waniewska. **16.10.2020** "What I got today during the VPN session is COSMOS for me. In this wonderful place, space-time bends." R.Kaczmarek, paramedic. **23.09.2019** „A VPN session makes it possible to regain energy for life in 20 minutes" W.Tarnowski Wrospace. **22.08.2020** "The "Magic" Scarf took me to distant galaxies beyond time and space. VPN brings the incredible opportunity to commune with your own soul and body right here. Honestly delighted! S.Nichcicki Department of Education Polish Space Agency POLSA. **05.03.2020** „...Coupe Aéronautique

Gordon Benett ...the oldest race in aviation...since 1906 Thank You for inspirational moments in „Vinci Power Nap”, showing us the energy from within each of us. Thank You for providing a deep insight into the basics of life. B. Pelard, Gordon Benett President Federation Francaise d'Aerostation. **17.10.2019** "Thank you for bringing me back to my childhood. This is the first such experience when wrapped in a cocoon, swung, fell asleep like a baby. It's amazing that in the center of a big city and in the middle of the day you can move to the land of dreams." M.Rudnicka, National Institute of Senior Economy. **10.01.2023** „Our sleep therapy seems to be working brilliantly. Thank you!" M. Maj. **23.01.2020** "VPN is a place where you will be reborn again, your heart, mind and soul will become calmer." K.Majka. **07.08.2022** „It was a unique experience. I was reborn after 20 minutes." A.Kudelski, Zug, Switzerland. **11.06.2019** „It would be great if it could be installed in the nap room of a taxi company" Yuki Mitani, Tokio. **07.06.2022** „I trained many astronauts but I have never been to the SPACE STATION. Today I slept in Vinci Power Nap and I know how they feel in space. Thank You Magda." A.B.Chmielewski NASA/ JPL Flight Project Manager. **23.01.2021** "Your VPN is an extraordinary place for people who lead a life in deep stress, because this place allows to return to feel senses, regain inner peace and vision that person had previously realized, and which was lost because the excess of external stimuli completely drowned out this feeling. What is most valuable in us, is what our senses bring us. This is definitely a brilliant discovery that aspires to the Nobel Prize and will certainly be on every interplanetary ship in the future. Thank you very much and I am grateful for that." K. Laba. **13.02.2020** "I'm so glad I discovered this place. It was wonderful to feel like a child again in his parents' arms. It cannot be described, it must be experienced." O. Malinkiewicz - CTO SAULE. **02.06.2020** "In today's world where people rush and rush, there is nothing more important for development than to relax. Whatever you're doing, relax your body first. This is the basis of above-average achievements in every field - in sports, medicine, work, learning, and even in making love. Vinci Power Nap by Magdalena Filcek is a great tool to achieve a state of relaxation - for the benefit of yourself, your colleagues and family." J. Skrzypczynski - top leaders's coach. **10.03.2019** „ Thanks Vinci Power Nap, 465 Delegates from 58 countries had a chance to regenerate their bodies and minds by achieving a great negotiation success. Appreciating the great passion, commitment, creativity and, above all, the instant results of the technology developed by Mrs. Magdalena Filcek, the Ministry of the Environment and the COP 24 Presidency recommend VPN to all organizers of conferences, workshops and trainings. M.Kurtyka, Ministry of Environment. **11.03.2019** „VPN emphasizing the restorative value of the peaceful interlude in an otherwise hectic conference period. We are most grateful for Ms.Filcek's initiative, and hope that she will be able to have a similar impact on other conference

participants in future events.” L.Lopez Director Conference Affairs Services United Nations Climate Change Secretariat. And many more in Guest Books.

VPN system was presented on many top conferences in sleep subject on Sleep Expo 2019 in Dubai, Somnex 2018 in London, Smart Cities Powered by People 2018 in New York, Resilient and Responsible Architecture and Urbanism in Malaysia 2019, Future Smart Cities in Kuala Lumpur 2020, and on many more, as the great tool for shift workers, doctors, children, soldiers, drivers, pilots, astronauts, travelers and others.

## 8. Conclusion

Leonardo da Vinci said: "study the science of art, study the art of science, learn to see”.

The author's findings allow for a closer look and explanation of the relationship between environmental stressors and human psychophysical conditions caused by the neurobiological reaction of the body. This biology of stress presenting mechanisms of histamine and enzyme release, having impact on the brain, emotions, sleep, energy, and quality of life. The pioneering evidence-based findings, revelations from the author’s study reviews and users feedback confirm the positive interventions and impressive results of Vinci Power Nap® system properties in the reduction of stress, fatigue and jet lag, as an environmental technology solution accelerates the synchronization of circadian rhythm, sleep patterns, balancing homeostatic factors (HPA axis), allostasis, mood and hormones, harmonizing the cardiovascular, respiratory, somatic nervous, immune system, reducing tachycardia and heart attacks. Its special frequency of internal hydrodynamic pulsations helps in accelerating enzymatic catalysis and other endocrine processes, muscles relaxing, deep sleep, faster regeneration of damaged cells and their structure, for example increasing bone tissue density, what is very needed for astronauts during and after space travels as well for pilots and passengers of airplanes. The author suggest that VPN session with additional antihistamines, vit. D3, B6, C, zinc, copper, the DAO enzyme before, during and after fast, long space journeys, could have preventive and therapeutic effects. The 20-min VPN sessions in neuroarchitecture increasing bliss, relax, calm, harmony, acceptance, focus, memory, creativity, happiness, rejuvenation, cognitive/physical performance, efficiency, mental clarity, body regeneration, allowing to increase energy for life. It highlights the need of implementation these solutions in the real world, at travel-related facilities like: airports, hotels, trains, ships, spaceship, Lunar, Martian habitats, but also at schools, hospitals, clinics, etc., to improve the wellbeing of travelers and inhabitants of future smart cities.

VPN interdisciplinary neurophysiological aspects can help to bring back the mind-body connection and the equilibrium of sleep/wake cycles in babies, children, adults and seniors -

and be used as help for relaxing, regenerative prevention and therapeutic purpose, e.g. for: stress, trauma, overtired, burnt-out, SPD, PTSD, anxiety, depression, anorexia, bulimia, obesity, eating disorders, any type of addictions, anger, pain, frustration, emotional disorders, compulsive behaviors, sensory disturbances, sleep disorders, asthma (relaxation of deep muscles), insulin resistance (related with the lack of sleep), Alzheimer’s, Parkinson’s disease and others, provides new insights and sheds new light on current research trends and future research directions related to circadian rhythm, sleep medicine, space medicine and psychology, homeostasis regulation, physiology, transplantology, neuroscience, biotechnology and biomedicine. „Understanding the effects of spaceflight on astronauts may help prepare NASA for planning longer crew stays in deep space and possible missions to Mars, where the day length is a little longer than 24 hours. Most importantly, investigating these effects can reveal new ways to reduce the general consequences of the exposure of spaceflight on the human body.” NASA [139]. „An integrated neuroscience research project could be implemented to identify the relationship between vestibular adaptation during spaceflight and sleep cycles, hormonal and immune changes, cardiovascular and pulmonary changes, muscle physiology alterations, etc. We should provide the members of the crew with a safe and appropriate environment in which they will be able to best adapt physiologically and mentally to the conditions during a long space flight.” NASA [145]. NASA JPL Manager Artur Chmielewski confirming jet lag relief in Vinci Power Nap® July 2022 [193]. In this context, the technology of Vinci Power Nap® neuroarchitecture system is a revolutionary tool for improving wellbeing, quality of sleep, relaxation, longevity, performance and energy for life, benefits travelers in Space and all humankind on Earth.

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## References

1. Sleep Foundation <https://www.sleepfoundation.org/>
2. Weitering H. Sleeping in Space: How Astronauts Get a Good Night's Rest (2017).
3. Colten HR, et al. Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem, 3Extent and Health Consequences of Chronic Sleep Loss and Sleep Disorders. Committee on Sleep Medicine and Research, National Acad. of Sciences (2006).
4. SingleCare Team rev.by Walsh M. Sleep statistics (2022).
5. Philips Global Sleep Survey. The global pursuit of better

- sleep health (2019).
6. Suni E. rev. Truong K. Sleep Statistics. Sleep Foundation (2022).
  7. Jehan S, et al. Shift Work and Sleep: Medical Implications and Management. Sleep Med Disord (2017).
  8. Akerstedt T, et al. Shift work and napping. In: Dinges D.F., Broughton R.J.(Eds) Sleep and Alertness: Chronobiological, Behavioral and Medical Aspects of Napping. Raven Press, New York (1989): 205-220.
  9. Schoutsen R. Coronosomnia: How the pandemic is creating a sleep epidemic (2021).
  10. Fry A. rev. Singh A. Coronasomnia: Definition, Symptoms, and Solutions (2023)
  11. Gao C, et al. Sleep health early in the coronavirus disease 2019 (COVID-19) outbreak in the United States: integrating longitudinal, cross-sectional, and retrospective recall data. Sleep medicine (2020).
  12. Doss CA. Et al. Effect of COVID-19 Lockdown on Sleep Quality and Insomnia in Collegiate Students. Biomed Pharmacol Journal (2022).
  13. Locker M. The Scientific Secrets to Preventing Jet Lag. TIME (2018).
  14. Watkins T. Researchers urge doctors to disclose sleep fatigue before surgery. CNN (2010).
  15. Perski A. the book: Stress. Poradnik na trudne czasy. Kielce (2022).
  16. Matoso M. Neuroarchitecture: how your brain responds to different spaces (2022).
  17. Dinges DF. Napping patterns and effects in human adults. In: Dinges DF, Broughton RJ (Eds) Sleep and Alertness: Chronobiological, Behavioral and Medical Aspects of Napping (1989): 171-204.
  18. <https://vincipowernap.asysto.pl/strona/8346-recommendation>
  19. Sleep Education Archive 2008. Sleep in the city: big-city living may cause insomnia, sleep loss (2020).
  20. Stevenson S. the book: Sleep smarter: 21 essential strategies to sleep your way to a better body, better health, and bigger success (2014).
  21. <https://thesleepambassador.com/>
  22. Dr Cherry N. EMF/EMR Reduces Melatonin in Animals and People (2002).
  23. Gradus JL. Epidemiology of PTSD. How Common is PTSD in Adults? 2020.
  24. Huffington A. The book: The Sleep Revolution (2016).
  25. Walker M. the book: Why We Sleep (2017).
  26. McCormick DA, et al. Thalamocortical Oscillations in the Sleeping and Aroused Brain. Science 262 (1993): 679-685.
  27. Kayaba M, et al. Energy metabolism differs between sleep stages and begins to increase prior to awakening. Metab Clin Exp (2017).
  28. Liu Y, et al. Prevalence of healthy sleep duration among adults—United States, 2014. MMWR Morb Mortal Wkly Rep (2016).
  29. National Institute of Neurological. Disorders and Stroke. Brain basics: Understanding sleep.
  30. Purcell S. et al. Characterizing sleep spindles in 11,630 individuals from the National Sleep Research Resource. Nat Commun 8 (2017): 15930.
  31. Summer J. Alpha Waves and Sleep. Sleep Foundation (2022).
  32. Zolovska B, et al. Key differences in pediatric versus adult sleep. Encyclopedia of Sleep. Stanf (2013).
  33. Bernardi G, et al. Regional delta waves in human rapid eye movement sleep. Journal Neuroscience (2019).
  34. Delta Waves Neurohealth.
  35. Dr Collins F. Discovering the Brain's Nightly "Rinse Cycle" (2020).
  36. Jaekyung K, et al. Competing Roles of Slow Oscillations and Delta Waves in Memory Consolidation versus Forgetting (2019).
  37. Blood flows out and cerebrospinal fluid flows into the sleeping brain. Science News.
  38. Fultz NE, et al. Coupled electrophysiological, hemodynamic, and cerebrospinal fluid oscillations in human sleep. Science (2019).
  39. Kylkilahti TM, et al. Achieving brain clearance and preventing neurodegenerative diseases—A glymphatic perspective. Jour of Cerebral Blood Flow & Metabolism (2021).
  40. Fultz NE, et al. Coupled electrophysiological, hemodynamic, and cerebrospinal fluid oscillations in human sleep" Science (2019).
  41. Khullar A. The Role of Melatonin in the Circadian Rhythm Sleep-Wake Cycle Psychiatric Times (2012).
  42. Green A. et al. Evening light exposure to computer screens disrupts human sleep, biological rhythms, and attention abilities. Chronobiol Int (2017).
  43. Castanon-Cervantes O, et al. Dysregulation of

- Inflammatory Responses by Chronic Circadian Disruption. *J Immunol* 185 (2010): 5796-5805.
44. Garcia A.N. et al. Polysomnographic sleep disturbances in nicotine, caffeine, alcohol, cocaine, opioid, and cannabis use: A focused review. *Am J Addict* (2015).
  - 44A. Ebrahim IO, et al. Alcohol and sleep I: Effects on normal sleep (2013).
  45. St-Onge M-P, et al. Effects of diet on sleep quality. *Adv Nutr* (2016).
  46. Sekimoto M. et al. Cortical regional differences of delta waves during all-night sleep in schizophrenia. *Schizophr Res* (2011).
  47. Cherry K. Deep Sleep and the Impact of Delta Waves (2021).
  48. Carey B. Sleep therapy seem as an aid for depression (2013).
  49. Edlund MJ. Want to Treat Depression? Get People to Sleep. Fix insomnia and better things happen (2013).
  50. Filcek M. The Neuroarchitecture Technology of Vinci Power Nap: A Revolution in Fast Stress Reduction, Newborns Protection, Well-being and Sleep Regeneration also for People with Trauma, Depression and PTSD in Smart Cities. *Journal of Psychiatry and Psychiatric Disorders* (2022).
  51. Konturek S. *Fizjologia czlowieka. IV. Neurofizjologia* (1998): 156, 1998
  52. Barrett L, et al. *Human evolutionary psychology*. Princeton Univ. Press (2002).
  53. Goldstein DS. Stress-induced activation of the sympathetic nervous system. *Bailliere's Clinical Endocrinology and Metabolism* 1 (1987): 253-278.
  54. Salik M. Len sie na zdrowie. *Focus Magazine* (2019).
  55. Shanker S. the book:Self-Ref (2016)
  56. Lau CI, et al. Clinical and biobehavioral perspectives: Is medication overuse headache a behavior of dependence? *Progress in Brain Research* (2020): 371-402.
  57. Pagowska E. Glod Dotyku. *Focus Magazine* (2019).
  58. Soojung-Kim Pang A. Rest—why you get more done when you work less. *Book*.
  59. Filcek M. Innovative Vinci Power Nap® Neurotechnology System—To Reset and Reconnect the Senses, Body and Mind; Reducing Stress, Improving Performance, Sleep, Health and Quality of Life. *Springer Resilient and Responsible Smart Cities* (2022).
  60. S Threlfell SJ, et al. Histamine H3 receptors inhibit serotonin release in substantia nigra pars reticulata. *J. Neurosci* 24 (2004): 8704-8710.
  61. Abbas AB, et al. Innate immunity. in: Saunders (Elsevier) (ed.). *Basic Immunology. Functions and Disorders of the Immune System*, 3rd ed., (2009).
  62. Okamoto-Mizuno, K. et al. Effects of thermal environment on sleep and circadian rhythm. *Journal of physiological anthropology* 31 (2012): 14.
  63. Filcek M. Discovery of the Mechanism of COVID19, SIRS and SEPSIS, Defense and Treatment. Mast cells and Histamine Storm an Overlooked Aspects in COVID19 and in Ventilated Patients Potential Role of Antihistamine. *MAR Pulmon*.3.5.
  64. Haas H, et al. The role of histamine and the tuberomamillary nucleus in the nervous system. *Nat Rev Neurosci* 4 (2003): 121-130.
  65. Fernandez-Novoa L. et al. Histamine function in brain disorders. *Behav Brain Res* (2001).
  66. Nuutinen S. et al. Histamine in neurotransmission and brain diseases. *Adv EMB* (2011).
  67. Karpati A, et al. Histamine elicits glutamate release from cultured astrocytes. *J Pharm Sc* (2018).
  68. Filcek M. Frequency of Harmony and the Unified Theory of Everything. Across the Universe towards Human Body and Mind with Discovery of Neuroarchitecture Vinci Power Nap® Pendulum as the Biotechnology of the Future” *Journal of Biotechnology and Biomedicine* 5 (2022): 163-179.
  69. Filcek M. Cutting edge solution for effective and safe missions - neuroarchitecture system of Vinci Power Nap® - revolution in fast stress reduction, regeneration, regenerating body and mind, which can help you, pilots, astronauts: before, during and after space travels. 71st International Astronautical Congress (2020).
  70. Martín-Alguacil N, et al. Somatosensation: End Organs for Tactile Sensation. in: Pfaff, D.W. (eds) *Neuroscience in the 21st Century*. Springer, New York (2013).
  71. Liao S, et al. Lymphatic function and immune regulation in health and disease. *Lym. Res Biol* (2013).
  72. Deli M.A. Histamine and the blood-brain barrier. in book: *Histamine: Biology And Medical Aspects* (2004).
  73. Butt AM, et al. Effect of histamine and antagonists on electrical resistance across the blood-brain barrier in rat brain-surface microvessels (1992).
  74. *The Glymphatic System – CSF* (2020)
  75. *The lymphatic system how to improve it natural recommendations. Natural ways of lymphangitis* (1932).

76. Tripathi AK, et al. Acceleration of enzymatic catalysis by active hydrodynamic fluctuations. *Commun Phys* 5 (2022): 10.
77. Alstadhaug KB. Histamine in Migraine and Brain (2014).
78. Michinaga S, et al. Selective histamine H<sub>2</sub> receptor agonists alleviate blood-brain barrier disruption by promoting the expression of vascular protective factors following traumatic brain injury in mice (2022).
79. Butt AM, et al. Effect of histamine and antagonists on electrical resistance across the blood-brain barrier in rat brain-surface micro vessels (1992).
80. Dialogues concerning two new sciences. by Galilei Galileo (1914): 1564-1642.
81. Ernst Chladni
82. Ullmann D. Life and work of E.F.F. Chladni. *Eur Phys J Spec Top* (2007).
83. Hans Jenny Cymatics
84. McLaughlin J. Good Vibrations. A membrane's properties can now be obtained by analyzing nodes—places where the system is at rest when vibrated at a natural frequency (1998).
85. Edgar RS, et al. Peroxiredoxins are conserved markers of circadian rhythms (2012).
86. Golombek DA, et al. Minutes, Days and Years: Molecular Interactions among Different Scales of Biological Timing. *Philosoph. Transactions of the Royal Society* (2014).
87. Nobel Prize <https://www.nobelprize.org/prizes/medicine/2017/press-release/>
88. Bragazzi NL, et al. Planetary sleep medicine: Studying sleep at the individual, population, and planetary level. *Front Public Health* 10 (2022):1005100.
89. El-Esawi MA, the book: Circadian Rhythms and Their Molecular Mechanisms.
90. Collins B. Et al. Keeping Time without a Clock. *NEURON* 50 (2006).
91. Gamble KL, et al. Circadian clock control of endocrine factors. *Nat Rev En* (2014).
92. Xie Z, et al. A review of sleep disorders and melatonin. *Neurol Res* (2017).
93. Zhao D, et al. Melatonin Synthesis and Function: Evolutionary History in Animals and Plants (2019).
94. Mottotese R, et al. Switching brain serotonin with oxytocin (2014).
95. Xie Z, et al. A review of sleep disorders and melatonin. *Neurol Res* (2017).
96. Daily Health Post Editorial. New Study: The More you Hug your Kids, the More Their Brains Develop (2019).
97. Sohal VS. Serotonin Gives Oxytocin a Helping Hand. *Neuroscience Sc* (2013).
98. de Mairan JJO. Observation botanique 1729. *Hist. de l'Acad. Royale Scie* (2013).
99. Gardner MJ, et al. How plants tell the time. *The Biochemical Journal* (2006).
100. Reiter RJ, et al. Melatonin mitigates mitochondrial meltdown: interactions with SIRT3 (2018).
101. Tan DX, et al. Melatonin: a hormone, a tissue factor, an autocoid, a paracoid, and an antioxidant vitamin. *J Pineal Res* (2003).
102. Suofu V, et al. Dual role of mitochondria in producing melatonin and driving GPCR signaling to block cytochrome c release. *Proc Natl Acad Sci USA* (2017).
103. Yoo SH, et al. PERIOD2::LUCIFERASE real-time reporting of circadian dynamics reveals persistent circadian oscillations in mouse peripheral tissues (2004).
104. Yamazaki S, et al. Resetting central and peripheral circadian oscillators in transgenic rats. *Sc* (2000).
105. Balsalobre A, et al. A serum shock induces circadian gene expression in mammalian tissue culture cells. *Cell* (1998).
106. Leise TL, et al. Persistent cell-autonomous circadian oscillations in fibroblasts revealed by six-week single-cell imaging of per2::Luc bioluminescence. *PLoS One* (2012).
107. Tsai LL, et al. Repeated light-dark shifts speed up body weight gain in male f344 rats. *Am J Physiol Endocrinol Metab* (2005).
108. Filipinski E, et al. Circadian disruption accelerates liver carcinogenesis in mice. *Mutation res* (2009).
109. Cambras T, et al. Circadian desynchronization of core body temperature and sleep stages in the rat. *Proc Natl Acad Sci USA* (2007).
110. Castanon-Cervantes O, et al. Dysregulation of inflammatory responses by chronic circadian disruption. *Journal of immunology* (2010).
111. Eastman CI, et al. How To Travel the World without Jet lag. *Sleep Med Clin* 4 (2009): 241-255.
112. Bin YS, et al. What works for jetlag? A systematic review of non-pharmacological interventions. *Sleep Med Rev* (2019).
113. Cingi C, et al. Jetlag related sleep problems and their management: A review. *Tra. Med Inf Dis* (2018).

114. Sack RL. The pathophysiology of jet lag. *Travel Med Infect Dis* (2009).
115. American Academy of Sleep Medicine. AASM sets standards and promotes excellence in sleep medicine health care, education, and research.
116. Vosko AM, et al. Jet lag syndrome: circadian organization, pathophysiology, and management strategies. *Nat Sci Sleep* (2010).
117. Jet lag prevention (2001).
118. Jet lag CDC <https://wwwnc.cdc.gov/travel/page/jet-lag>
119. Beh SF, et al. Air travelers' experiences and understanding of jetlag and perceptions of management strategies: a qualitative study. *Ergonomics* (2022).
120. Castanon-Cervantes O, et al. Dysregulation of inflammatory responses by chronic circadian disruption. *J Immunol* 185 (2010): 5796-5805.
121. NASA Human Research Program. Risk of Performance Decrements and Adverse Health Outcomes Resulting from Sleep Loss, Circadian Desynchronization, and Work Overload (2016).
122. HPA van Dongen, et al. The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation.
123. Sleep Oscillations in Space (2019).
124. Fatigue Management Guide for Airplane Operators II ed (2015)
125. Flight crew Fatigue Recommendations for airlines on reducing and preventing crew fatigue. 2008. Delft University of Technology Faculty of Technology, Policy and Management Safety Science Group Raymond Dijkshoorn Student number: 9211477
126. Dacey J. Yawning drivers urged to power nap.
127. Huffington A. Take the Pledge to Not Drive Drowsy. #TakeABreakToStayAwake" change.org".
128. Rosekind, M.R. et al. Factors in Flight Operations IX: Effects of Planned Cockpit Rest on Crew Performance and Alertness in Long-Haul Operations (NASA Technical Memorandum 108839). NASA Ames Research Center, California, 1994.
129. Rosekind MR, et al. Alertness management: strategic naps in operational settings. *Journal of Sleep Research*. December (1995).
130. Rosekind MR, et al. Alertness management in aviation operations: enhancing performance and sleep. *Aviat Space Environ Med* (2006).
131. On the Road to Fewer Fatigue Crashes. Commercial Transportation. *Sleep Review* (2015).
132. Young JA. The Effects of Life-Stress on Pilot Performance. NASA/TM-2008-215375. Ames Research Center, Moffett Field, California (2008).
133. Selby B, et al. NASA helps pilots combat fatigue during long flights (2014).
134. Stanford University. The Facts of Napping (2013).
135. Stein L. Napping may be good for your heart. *Scientific American* (2017).
136. Courson P. NTSB urges fatigue-fighting strategies for air traffic controllers.
137. Geoghegan T. Who, what, why: How long is the ideal nap? (2011).
138. Dr Barger LK, et al. Prevalence of Sleep Deficiency and Hypnotic Use Among Astronauts Before, During and After Spaceflight: An Observational Study (2014).
139. Williams K. NASA Research Reveals Biological Clock Misalignment Effects on Sleep for Astronauts. Ames Research Center (2016).
140. Clément G. Fundamentals of Space Medicine. The book. Springer (2011).
141. Kanas N, et al. Space Psychology and Psychiatry. The book Springer (2008).
142. Artiles AD. Human Performance in Altered-Gravity Environments (2018).
143. Neri DF, et al. Sleep, Circadian Rhythms, and Performance During Space Shuttle Missions (2013).
144. Buxton OM, et al. Sleep disruption due to hospital noises (2012).
145. NASA: Boyle R, et al. Challenges to the central nervous system during human spaceflight missions to Mars (2020).
146. van Dongen HPA, et al. The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation (2003).
147. Advanced Concepts Team. Sleep Oscillations in Space. Bio-engineering (2019).
148. Moldofsky H, et al. Microgravity, Sleep/Wake Immune Functions (SWIF) in Humans. Managing NASA Center: Johnson Space Center Experiment ID: 9401710.
149. Kołodziejczyk A. Pozaziemska służba zdrowia. Red:K. Lurka (2016).

150. NASA Human Research Program. Risk of Performance Decrements and Adverse Health Outcomes Resulting from Sleep Loss, Circadian Desynchronization, and Work Overload (2016).
151. Dijk DJ, et al. Sleep, performance, circadian rhythms, and light-dark cycles during two space shuttle flights (2001).
152. Hadfield C. An Astronaut's Guide to Life on Earth -Life Lessons from Space 54 (2015): 55
153. Hermaszewski M. Ciezar niewazkosci. Opowiesc pilota- kosmonauty. 5,58,61,69,71,82,162,104,136,192 ,215, 219,(150-151). Krakow 2013.
154. <https://vincipowernap.asysto.pl/strona/8791-nasa-jpl-recommendation>
155. Howell E. Weightlessness and its effect on astronauts (2017)
156. Littlehales N. Sleep. The book (2016).
157. Powell A. Sleeping your way to heart health. A nap a day may keep the cardiologist away, study finds. The Harvard Gazette (2007).
158. Fiedorowicz A, et al. Drzemka za biurkiem? Pracodawca powinien je zalecać (2018).
159. Gardner EP. Touch. New York University School of Medicine (2010).
160. Viens A. Global Health. Are you sleeping enough? This infographic shows how you compare to the rest of the world (2019).
161. Kandel ER, et al. Principles of Neural Science. 22 The Somatosensory System: Receptors and Central Pathways. 5th ed. (2013).
162. Pole kwantowe: [https://pl.wikipedia.org/wiki/Pole\\_kwantowe](https://pl.wikipedia.org/wiki/Pole_kwantowe) (2023).
163. [https://pl.wikipedia.org/wiki/Transformacja\\_Lorentza#/media/Plik:Animated\\_Lorentz\\_Transformation.gif](https://pl.wikipedia.org/wiki/Transformacja_Lorentza#/media/Plik:Animated_Lorentz_Transformation.gif) Av: 2023-01-20
164. Space Center Houston. Exploring Einstein's world. <https://spacecenter.org/exploring-einsteins-world/>
165. Gravitational waves from a binary black hole merger observed by LIGO and Virgo (2017).
166. Einstein A. Das Raum-, Ather- und Feld- Problem der Physik. in: A. Einstein, Mein Weltbild. Amsterdam: Querido (1934): 229-248
167. Einstein A. Raum, Ather und Feld in der Physik. Forum Philosophicum (1930): 173-180.
168. Einstein A. Das Raum-, Feld- und Ather-Problem in der Physik. Die Koralle (1930): 486-487.
169. Einstein A. Das Raum-, Feld- und Ather-Problem in der Physik. Transactions of the second world power conference (1930): 1-5.
170. Kostro L. Albert Einstein's new ether and his general relativity (2004).
171. Morin D. Electromagnetic waves. Chapter 8. Ret. from: [https://scholar.harvard.edu/files/david-morin/files/waves\\_electromagnetic.pdf](https://scholar.harvard.edu/files/david-morin/files/waves_electromagnetic.pdf) (2023).
172. The Production of EM waves (2023).
173. Zablotskii, et al. How a High-Gradient Magnetic Field Could Affect Cell Life. Sci Rep 6 (2016): 37407.
174. Stratton D, et al. Extremely low-frequency magnetic fields significantly enhance the cytotoxicity of methotrexate and can reduce migration of cancer cell lines via transiently induced plasma membrane damage. Biochemical and Biophysical Research Communications 626 (2022): 192-199.
175. Richard H, et al. Effects of Electromagnetic Fields on Cells: Physiological and Therapeutical Approaches and Molecular Mechanisms of Interaction A Review. Department of Anatomy, University of Technology, Dresden, Germany.
176. Chu J. MIT engineers fly first-ever plane with no moving parts.The silent, lightweight aircraft doesn't depend on fossil fuels. MIT NEWS (2018).
177. DeBaun DT. Ways to Reduce EMF Exposure While Flying in an Airplane. EMF Protection & Safety, Travel (2019).
178. The Coriolis Effect: Which way do planes fly the fastest? (2023).
179. Coriolis Force [https://en.wikipedia.org/wiki/Coriolis\\_force](https://en.wikipedia.org/wiki/Coriolis_force)
180. Coriolis force on bullet vs airplane (2022).
181. PowiedzSprawdzam: Raki w samolocie (2023).
182. Indii. Szkodliwe skutki promieniowania elektromagnetycznego i pól elektromagnetycznych (2016).
183. Richard HW, et al. Effects of Electromagnetic Fields on Cells:Physiological and Therapeutical Approaches and Molecular Mechanisms of Interaction A Review. Dep. of Anatomy, University of Technology, Dresden, Germany Cells Tissues Organs (2006).
184. Rand DA, et al. Uncovering the design principles of circadian clocks: mathematical analysis of flexibility and evolutionary goals. J Theor Biol (2006).
185. Szymański L. Wpływ fal elektromagnetycznych na organizmy. 5G Centrum Kompetencji Polytechnic Lodz.

186. Dimitriou R, Jones E, McGonagle D, et al. Bone regeneration: current concepts and future directions (2011).
187. The Guardian. AFP in Paris „Lost in space: returned astronauts struggle to recover bone density, study finds” Thu (2022).
188. Tan Z, et al. Advances in the Clinical Application of Histamine and Diamine Oxidase (DAO) Activity: A Review. Catalysts (2023).
189. Hongzhong L, et al. The allergy mediator histamine confers resistance to immunotherapy in cancer patients via activation of the macrophage histamine receptor H1. Cancer Cell (2022).
190. Porges S. The polyvagal theory: New insights into adaptive reactions of the autonomic nervous system (2009).
191. 9 Fascinating Facts About the Vagus Nerve (2021).
192. Shah P, et al. Travel and Sleep. American Thoracic Society. American Journal of Resp. and Critical Care Med.
193. [https://www.youtube.com/watch?v=Yx\\_VgTa6lZo](https://www.youtube.com/watch?v=Yx_VgTa6lZo)