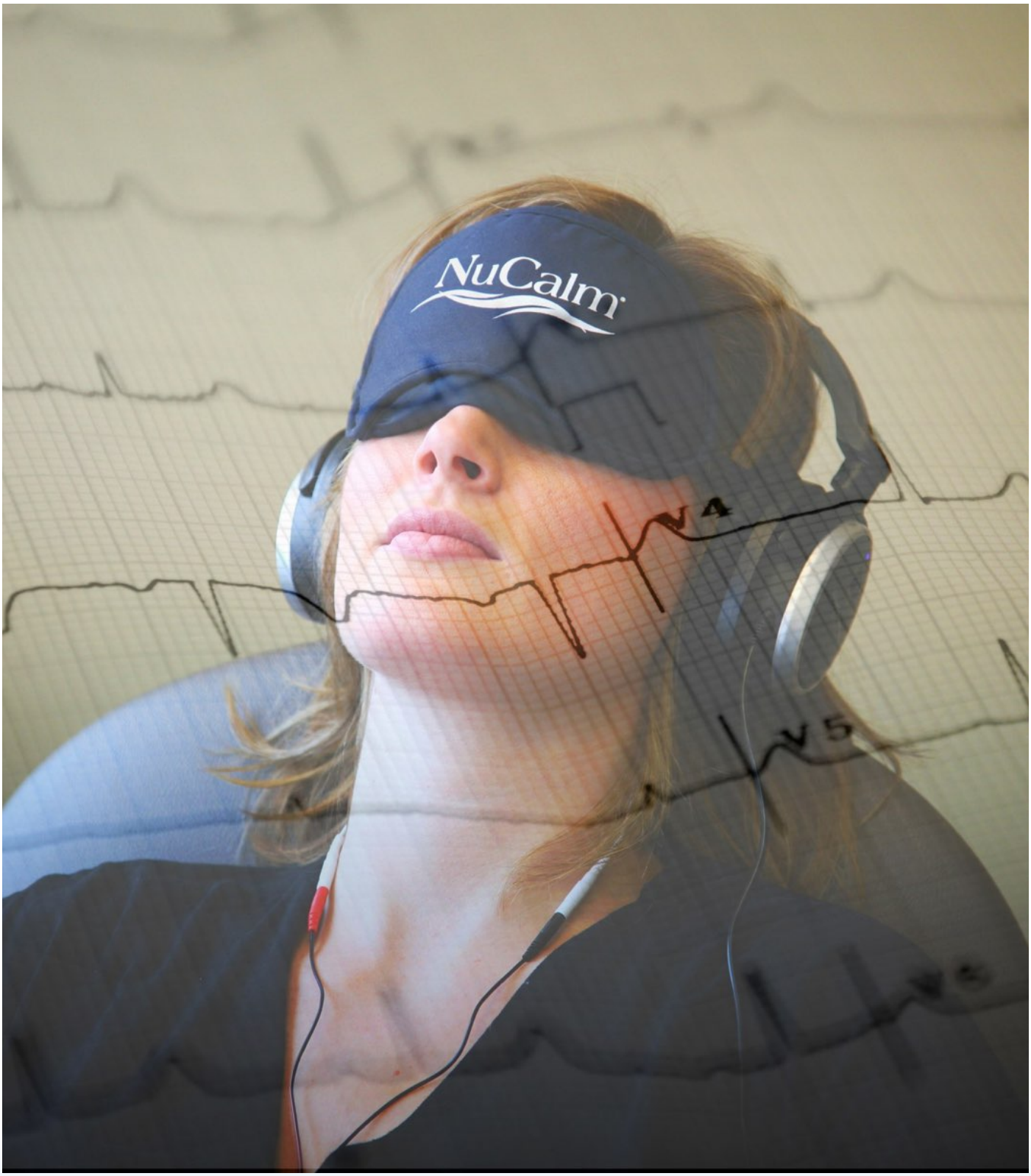
PERFORMANCE

NuCalm

NUCALM RESEARCH UPDATE



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NuCalm® is an all-natural anxiolytic technology clinically proven to remediate stress at the midbrain with no significant side effects or post-experience recuperation. NuCalm was invented by pioneering neuroscientist, Dr. G. Blake Holloway, founder of Solace Lifesciences, Inc., a neuroscience company focused on personalized, evidence-based wellness and performance. NuCalm is the world's first and only patented system for "**balancing and maintaining the health of the human autonomic nervous system** - U.S. Patent Registration No.:9,079,030; Issued July 14, 2015." NuCalm leverages four discrete anxiolytic components into a scientifically sequenced application that creates the following neurophysiologic response:

- Rapid induction of parasympathetic hypnagogic dissociative state
- Sustained, steady parasympathetic dominance throughout the NuCalm experience
- Rapid return to a functional state (motor skills, attention, and full cognition) with no lingering negative post-sedative effects

NuCalm was made commercially available to licensed healthcare practitioners in September 2010, after eight years of scientific discovery, research, and development. To date, over 950,000 patients, across five continents, have experienced NuCalm without a single reported adverse event. Dentists across the globe are using NuCalm to improve the dental experience with exceptional satisfaction rates; 95% of patients state they would use NuCalm again, and over 98% state they would recommend NuCalm to their friends and family.

The anecdotal evidence and reported positive responses to NuCalm have been profound. Many users have likened NuCalm to "meditation in a box." The meditation analogy is logical considering NuCalm creates parasympathetic nervous system dominance. Most of the parasympathetic innervation (nerve energy) comes from the vagus nerve, which exits the brain and connects to the gastrointestinal tract, respiratory tract, heart, and abdominal organs. Consistent use of NuCalm is proven to help people achieve autonomic nervous system balance, cellular homeostasis, improved stress resiliency, and greater neuromuscular equilibrium. This "reset" resolves the negative impact of stress and positions people for optimal performance and wellness.

Quantitatively, Solace Lifesciences, Inc. used numerous neurophysiological biomarkers to validate NuCalm's anxiolytic response during the rigorous patent process to establish novelty and efficacy.

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All of the biomarkers validated a rapid parasympathetic dominant response during a NuCalm session:

- Electroencephalogram (EEG at CZ, C3, and C4)
- Quantitative Electroencephalogram (QEEG at 32 sites)
- Neurotransmitter lab panels
- Galvanic Skin Response (GSR)
- Heart Rate Variability (HRV)
- Respiratory Sinus Arrhythmia (RSA)
- Blood Volume Pulse (BVP – vasoconstriction)
- SCP (Slow Cortical Response – DC – brain activity and cerebral blood flow)
- Alpha-Theta Crossover – % time Alpha amplitude over Theta amplitude

In October 2012, Solace Lifesciences, Inc. began collaborating with statistical biophysicists Dr. Chung-Kang Peng and Dr. Yanhui Liu to study the positive impact NuCalm has on autonomic nervous system balance and restorative sleep.

Dr. Peng is one of the world's preeminent experts on Heart Rate Variability (HRV). His research has been cited over 23,000 times in medical journals. Dr. Peng is the Co-Director of the Rey Institute for Nonlinear Dynamics in Medicine at the Beth Israel Deaconess Medical Center and Associate Professor of Medicine at Harvard Medical School. Dr. Peng and his colleagues have defined a proven method to identify stages of sleep, including breath-disturbed sleep, using a single channel ECG-based spectrogram and an algorithm developed by Dr. Norden Huang. The Hilbert-Huang Transform (HHT) was developed for NASA and is used to decompose a signal into intrinsic mode functions to obtain instantaneous frequency data.

"From our preliminary study of a small group of volunteers using NuCalm, we observed that these subjects experience a rapid decrease in heart rate and respiration rate while exhibiting an increase in vagal tone. These physiological biomarkers are consistent with deep meditation and illustrative of the rapid onset of parasympathetic nervous system dominance created by NuCalm. Our preliminary results indicate that the NuCalm system could be a powerful tool for stress intervention and sleep quality improvement."

— Chung-Kang Peng, Ph.D., Co-Director, Rey Institute for Nonlinear Dynamics in Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School

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Dr. Peng and Dr. Huang are co-directors of The Center for Dynamical Biomarkers and Translational Medicine, with the following research focus:

- Mathematical models of multi-scale structure properties in biomedical signals
- Cerebral auto-regulation dynamics in stroke patients
- Underlying characteristics of biological rhythms in multimodality approaches
- Mechanisms of sleep homeostasis
- Innovative medical imaging processing and analysis tools
- Identification of dynamical biomarkers to predict the success of the atrial fibrillation ablation procedure
- Large-scale population study of long-term blood pressure monitoring
- Dynamical biomarker analysis of cardiovascular diseases
- Development of a fall-risk evaluation and balance stability enhancement system by measuring noninvasive physiological signals

Dr. Peng and professor/psychiatrist Dr. Albert Yang co-developed an information-based categorization algorithm, while Dr. Peng was a post-doctorate fellow at Harvard. The method is based on an idea Dr. Peng developed when he was a physics graduate student, in which he combined the concepts of Shannon Entropy Theory and statistical physics. Dr. Yang was able to effectively apply the method to distinguish heart beat patterns in health and various diseases. Later, the two applied the algorithm to study a major authorship debate in Chinese literature. They were able to demonstrate that "The Dream of the Red Chamber" (a famous 18th century Chinese novel) was written by two authors. When showing this result to their colleagues at Harvard, Dr. Goldberger suggested that the two examine the plays by William Shakespeare. Their method was able to identify that the play "Edward III" was written by Christopher Marlowe, not William Shakespeare. For their contribution, they were awarded the 2003 Hoffman Prize: http://www.marlowe-society.org/reading/info/hoffmanwinners.html. Dr. Peng and Dr. Albert Yang subsequently used this method to study DNA sequences.

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Dr. Yanhui Liu founded DynaDx Corporation in 2005 as a technology incubator. DynaDx develops technologies that leverage the advances in dynamical signal analysis to improve clinical diagnosis and prediction ability. The company's products are based on dynamical analysis of physiologic signals, including ECG, EEG, blood pressure, respiration, and neuromuscular signals. DynaDX created a heart rate monitor - a single lead ECG EZ Sleep device that uses the Hilbert-Huang transform algorithm to accurately measure heart rate, respiration rate, and respiratory sinus arrhythmia (RSA). RSA is a sensitive and accurate measure of vagal tonality and an indicator of parasympathetic nervous system dominance. The vagus nerve serves as a bridge between the brain and the heart and vagal tone measures autonomic nervous system health. This measurement opens a window to one of the most powerful regulatory systems in the body – viscera and the endocrine system.

The figures below show NuCalm subject data using the ECG EZ Sleep device. The 30-minute NuCalm session is outlined by the vertical lines. The subject experienced a rapid decrease in heart rate and respiration rate while exhibiting an increase in vagal tonality. These biomarkers are consistent with deep meditation and indicate the rapid, predictable onset of parasympathetic nervous system dominance, as well as, increased stress resiliency created by NuCalm, as measured by RSA.

Figure 1: Heart rate

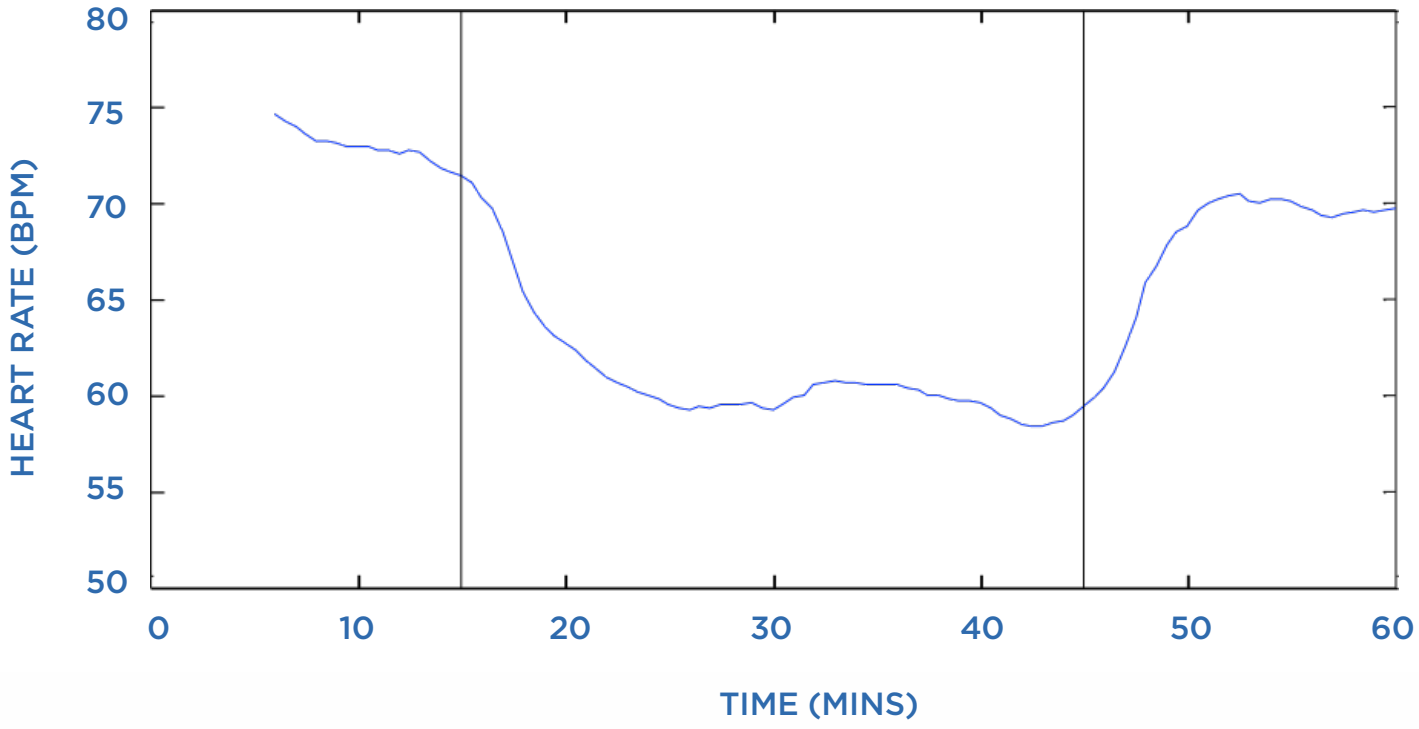

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Figure 2: Respiration rate

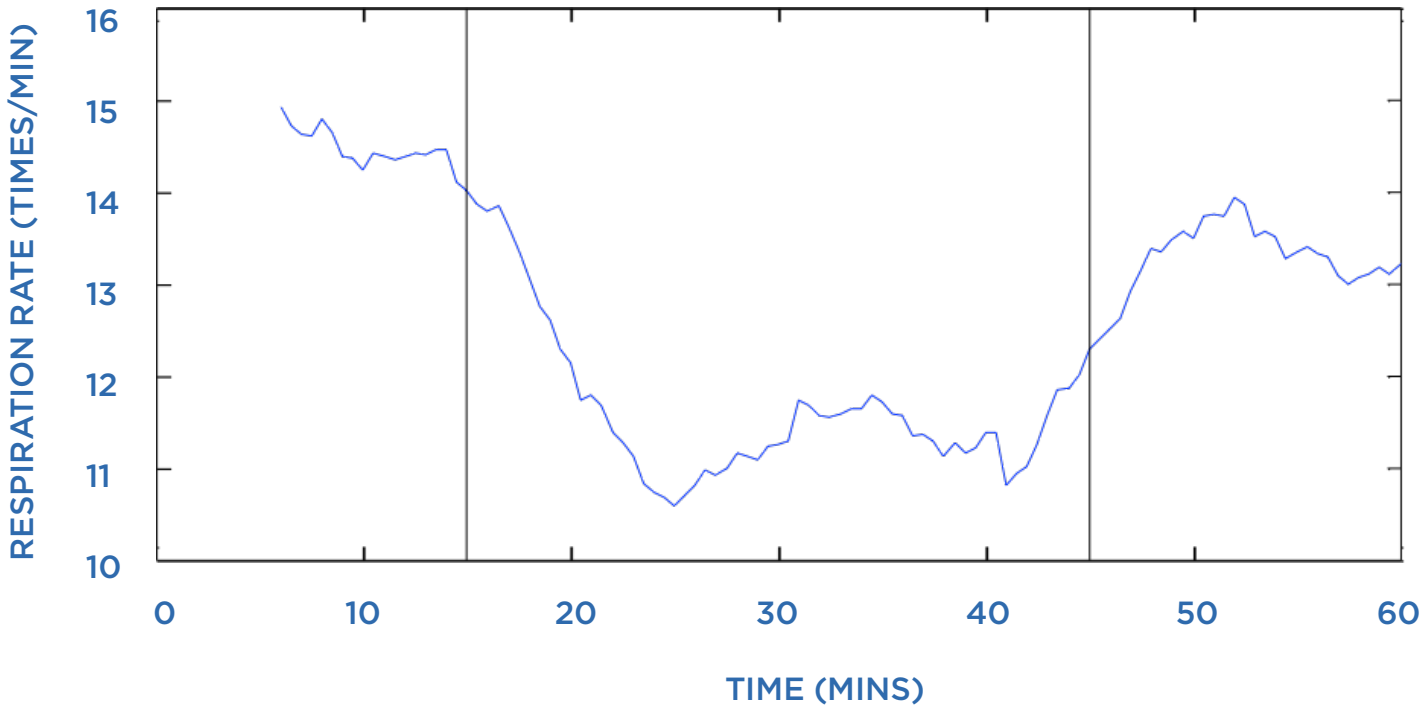
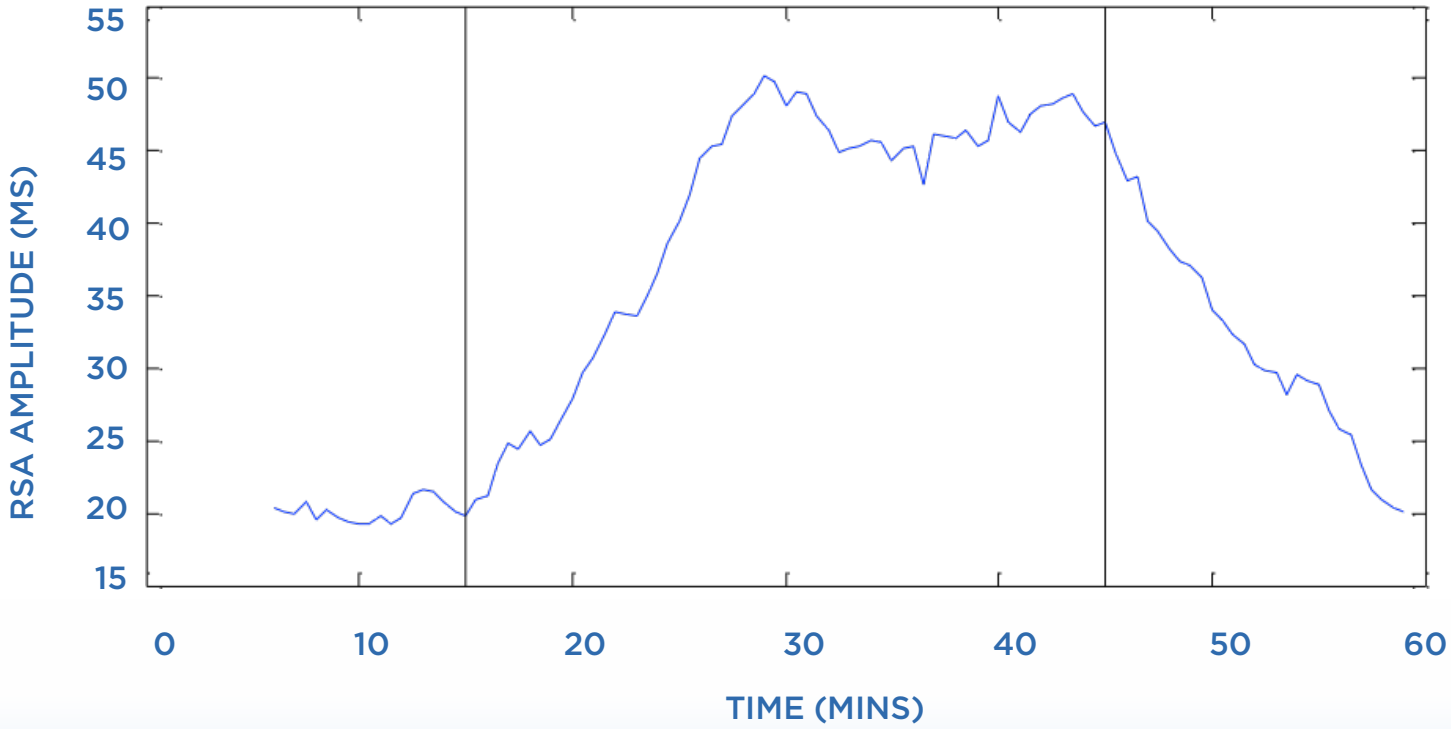


Figure 3: RSA amplitude



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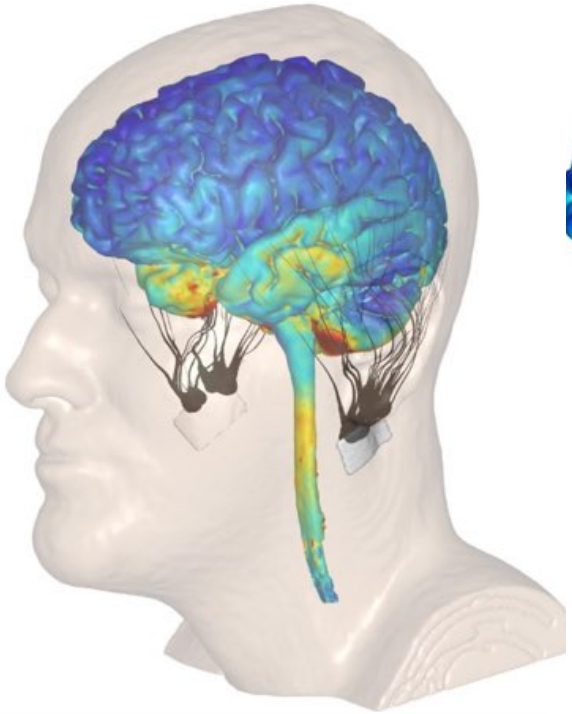
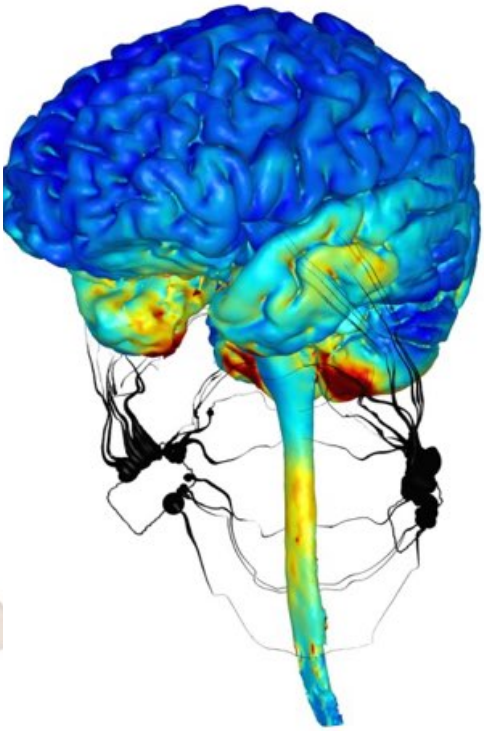
Finite Element Method Results

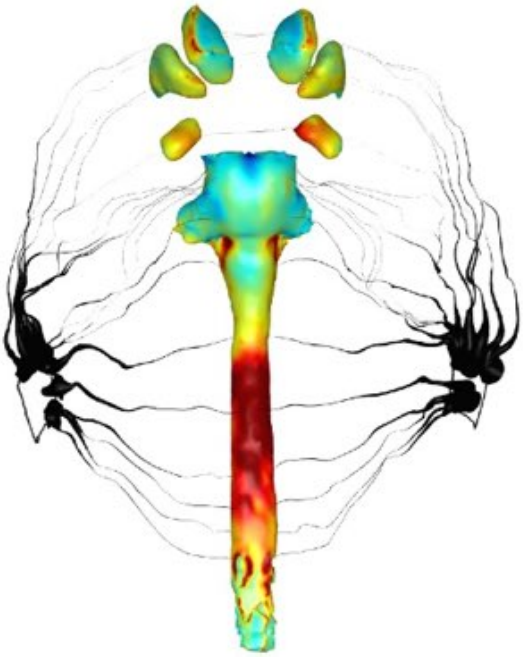
Using state-of-the-art Finite Element Method (FEM) stimulations on a subject (an MRI-derived head model of an adult male), Dr. Marom Bikson, co-director of Neural Engineering at The City College of New York and the New York Center for Biomedical Engineering, has been researching NuCalm's impact on the brain.

Dr. Bikson is a recognized leader in the research and development of: medical devices, including biosensors, drug delivery technology, and electrotherapy devices for neurological disorders; medical device safety, including electrical hazards, electroporation, heating damage, and safe stimulation protocols; neuronal networks underlying normal brain function, including the role of endogenous electric fields; new treatments for neurological diseases, including epilepsy and depression, through translational research.

As the MRI images below show, NuCalm impacts the deep midbrain, temporal cortex, cerebellum, and the brain stem. The Vagus nerve serves as the Autonomic Nervous System (ANS) highway, transmitting critical regulatory signals between the brain and the cardiac, endocrine, digestive, and other critical physiological systems. NuCalm creates ideal balance (homeostasis) in the ANS placing it in the (parasympathetic) restoration zone. **RED** equals maximum intensity on that particular view; **BLUE** equals limited intensity; **GREEN** equals mid intensity.







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NuCalm Research - Oncology and Professional Athletes

Solace Lifesciences is currently conducting research with Dr. Peng on NuCalm's impact on the autonomic nervous system/sympatho-vagal balance, using the Kubios 2.2 heart rate variability single lead ECG developed by the Department of Applied Physics, University of Eastern Finland. This device captures 250 data points per second. Once collected, the data is analyzed using non-linear frequency domain mathematical models, including the Multi-Scale Entropy mathematical model and the Hilbert-Huang transform algorithm, to show the quantified impact on a subject's autonomic nervous system. The company is collecting data from two separate populations: stage IV cancer patients and professional athletes.

Stage IV Cancer Patients

NuCalm is currently used with oncology patients to effectively manage midbrain stress and reduce vagus nerve overstimulation, thus remediating nausea and "chemo fog," and improving sleep quality. The company is working in partnership with the Comprehensive Cancer Wellness Program and The American Health Institute led by Dr. Janet Hranicky, world-renowned psychoneuroimmunologist. Effective stress management, through repeated NuCalm use, can alter the psychoneuroendocrine regulation of the immune system, improving the immunosuppressive status of patients.

Solace Lifesciences has collected data points on hundreds of subjects using the single lead ECG device to measure the physiological impact of NuCalm. The research protocol follows:

1. Apply the single lead ECG to the subject's chest.
2. Allow the subject to sit comfortably for a 15-minute baseline assessment to capture their current stress level and autonomic nervous system balance.
3. Apply the NuCalm system and allow the subject to experience NuCalm for as long as they need, with a minimum of 30 minutes. Subjects experience NuCalm in a comfortable chair with a blanket.
4. Once the NuCalm experience is over, the subject removes the NuCalm system, as well as the single lead ECG device.

The data sets from one of the cancer research subjects are provided on the following pages. The data reflects this subject's first NuCalm experience.

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Cancer Patient ECG Data

Figure 4: 15-minute baseline

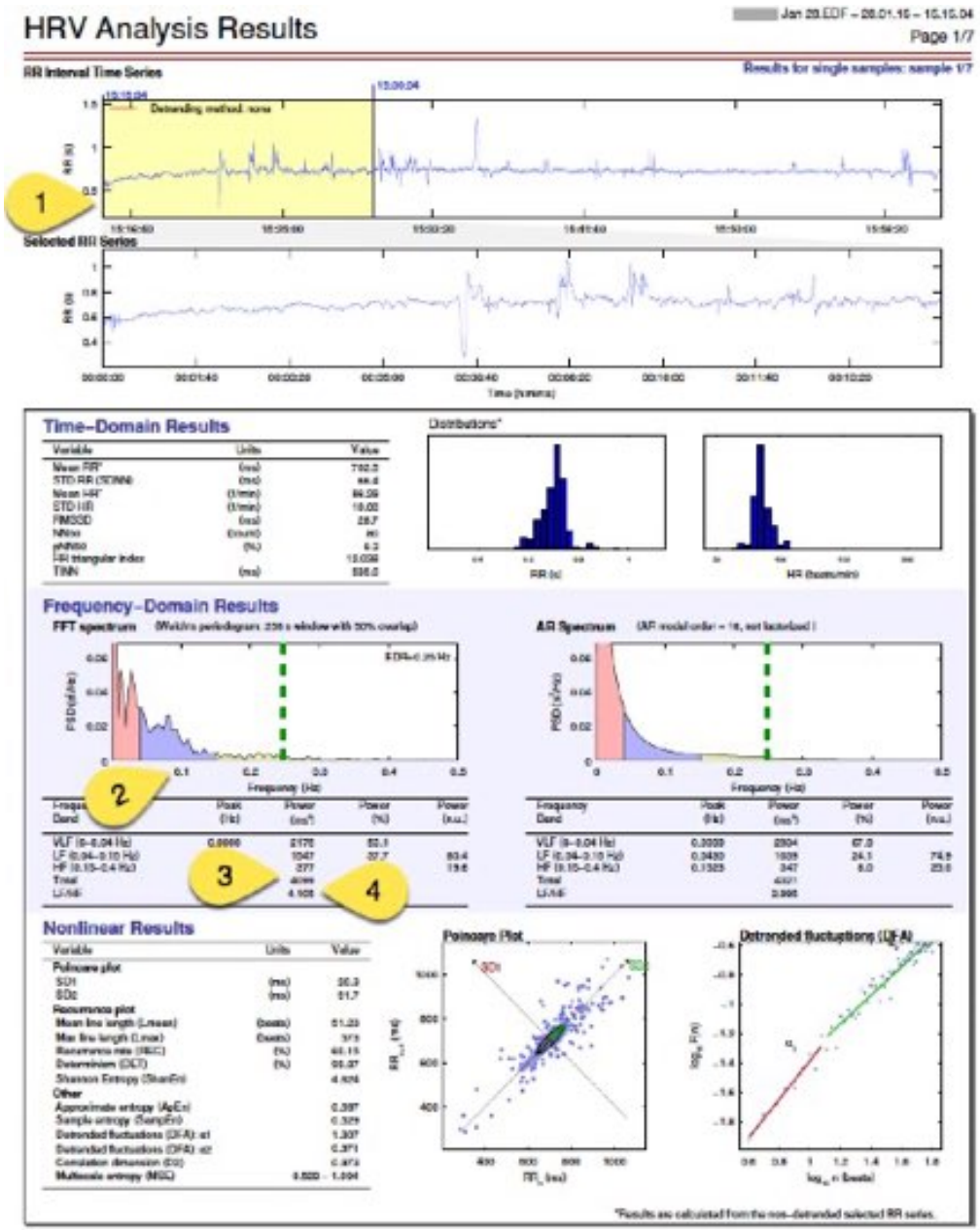

Figure 4 Summary

1. 15-minute baseline
2. 0.1 Frequency-Domain activity
3. Total power spectrum = 4099
4. LF/HF ratio = 4.105

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Figure 5: First 5 minutes on NuCalm

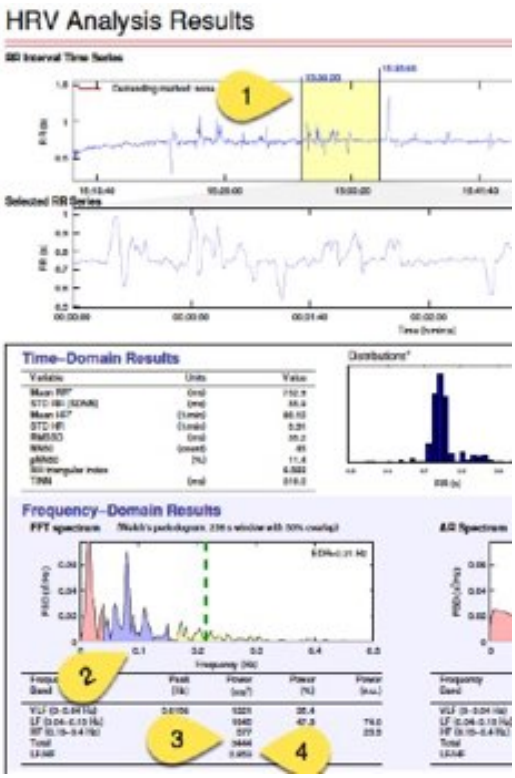

Figure 5 Summary

1. Initial 5 minutes on NuCalm
2. 0.1 Frequency-Domain activity - one "meditator's peak" achieved
3. Total power spectrum = 3444
4. LF/HF ratio = 2.853

Figure 6: 25 minutes on NuCalm

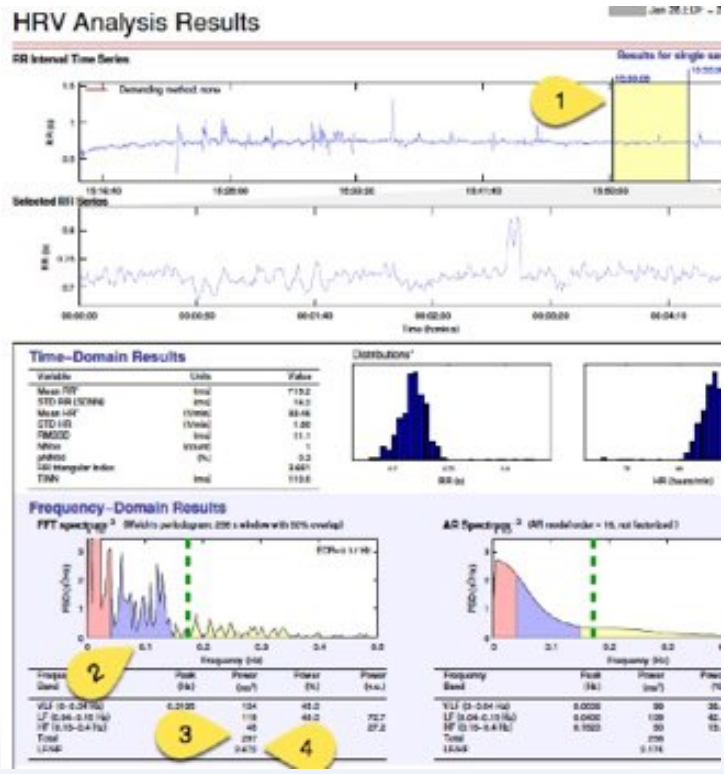

Figure 6 Summary

1. 25 minutes on NuCalm
2. 0.1 Frequency-Domain activity - multiple "meditator's peaks" achieved
3. Total power spectrum = 297
4. LF/HF ratio = 2.672

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Results

The LF/HF ratio quantifiably illustrates the balance of the sympathetic nervous system (LF) and the parasympathetic nervous system (HF). Sympatho-vagal balance is important for people battling diseases such as stage IV cancer, because they need to be able to turn off the adrenaline response, allowing the body to restore, recover, and heal. The subjects consistently showed a profound decrease in the LF/HF ratio across each 5-minute segment and for the duration of each NuCalm experience, indicating optimal healing. The only anomaly to the decrease in LF/HF ratio occurs when a subject falls asleep during NuCalm, which elicits a spike in sympathetic nervous system activity to maintain a heart beat. When subjects fell asleep during their respective NuCalm experiences, the sleep activity did not last long, typically 1 to 4 minutes before the subject comes up from sleep and experiences deep relaxation associated with theta brain wave function.

The data shows a consistent pattern regarding NuCalm's impact on the autonomic nervous system. Within 1 to 5 minutes of experiencing NuCalm, the subject experienced a rapid descent into parasympathetic nervous system dominance and hypnogogic dissociation, reflected by the immediate and profound reduction in the Total Power Spectrum (ms^2) and the LF/HF ratio. The Total Power Spectrum within the Frequency-Domain Result Fast Fourier Transform (FFT) algorithm is a quantified measure of the subject's autonomic nervous system (sympathetic nervous system and parasympathetic nervous system), where the sympathetic tone is a more significant contributor to the Total Power Spectrum. This subject's Total Power Spectrum rapidly decreased, continued to decrease across each 5-minute segment, and maintained reduction throughout the entirety of each NuCalm experience. The Total Power Spectrum was reduced by 16% in the first five minutes. The Total Power Spectrum was reduced by 92% after 25 minutes on NuCalm (see Figure 4 and Figure 6 to illustrate the change from 4099 to 297).

This subject achieved a resonate "Meditator's Peak" while NuCalming. This peak is achieved at the 0.1 Frequency-Domain and is equivalent to 10,000 hours of monastic meditation. 0.1 is derived by dividing 6 breaths by 60 seconds. 6 breaths per minute is the optimal biorhythm and coherence for humans. When the subject's brain wave function reaches frequent alpha/theta crossovers and can maintain deep theta, the body will heal at an optimal level, and the body will achieve maximum oxygenated blood flow. Most humans cannot achieve this level of meditation. NuCalm does not create meditation; it uses neurophysiology, biochemistry, and physics to synergistically mimic the healing principles of deep cellular homeostatic sympatho-vagal balance (synonymous with deep meditation). The subjects showed a cumulative impact of repeated NuCalm usage - the more each subject experienced NuCalm, the faster and deeper the relaxation response, as indicated by the decrease in their Total Power Spectrum and the LF/HF ratio within a shorter time frame.

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"There is extensive research in the literature that shows a strong correlation between stress, psychological factors, and cancer. Evidence exists linking an individual's stress response to, not only the development and course of cancer, but also to their response to treatment as well. According to research at Stanford University Medical School by Dr. Bruce Lipton, a highly renowned and respected cell biologist, stress is the cause of at least 95% of all illness and disease. For sure stress has an impact and a negative effect on one's health with looking at cancer, but also heart disease, diabetes, any of the autoimmune disorders, and even the dermatological spectrum of disorders. Illness exists within a human being, so a human being, depending upon their state of well-being, including the state of health of their autonomic nervous system, is either more prone to disease and symptomology or is less prone when in a more optimal, balanced state. When we are going through a lot stress, we are more vulnerable to getting sick - even if it's a common cold or the flu.

We have been using NuCalm as a core treatment to balance the health of the autonomic nervous system for people that have a diagnosis of cancer at the Comprehensive Cancer Wellness Program since October 2014. In my clinical experiences and research over the last thirty years in the field of psychoneuroimmunology in cancer, I've seen that the more we intervene and help people down-regulate stress physiology, the more we can help regulate the immune system and all of the other healing mechanisms in the body as well. The results of our NuCalm research study are indicating a definite impact on strengthening the parasympathetic nervous system and down-regulating stress physiology as evidenced by pre-and post testing of patient Heart Rate Variability.

NuCalm naturally relaxes the body within minutes, creating a state of deep relaxation where the old limbic brain gets put to rest. The brain gets put into a state of comfort and well-being, meaning that there is no perceived danger,

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and so there is a calming of the entire nervous system. This state of relaxation and comfort is pivotal to the work I do in psychoneuroimmunology in cancer. I focus a lot on cognitive behavioral interventions. Helping people think healthier, to have healthier emotional responses, to have healthier, richer, more meaningful experiences and awareness to the things in their life, so that they're not upsetting themselves in the ways that they previously used to. My experiences have shown that people can only think themselves well so much, before they encounter a roadblock, because what really becomes important is neural coherence in the brain.

NuCalm allows the old limbic area of the brain to experience a state of perceived safety and comfort, which triggers a parasympathetic response and the chemical changes physiologically connected with it. When the old brain is calm and feels safe, the frontal cortex can experience synchronicity and flow throughout the entire organism, and allow the person to go into a state of deep relaxation. Perhaps, deeper than they might have gone for a long, long time. That state, we know, is a healing state. Going into and having periods of deep, restorative rest and relaxation is hugely important for getting better, getting well, and for creating optimal health and well-being. For most patients, there has been a chronic stress physiology involved with cancer, both before the diagnosis and then, for sure, secondary to having a diagnosis. The NuCalm state of deep relaxation allows for recuperation and a reboot of the system that can provide the resiliency necessary to come back to where regeneration can occur. Regeneration occurs when we can bring down the stress physiology, because the immune system, the hormonal system, all of the healing mechanisms will begin to buoy back up and begin to self-regulate again.

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Our cognitive behavioral responses are important in the learned relaxation response. However, it is virtually impossible for the frontal cortex to convince the old limbic brain that it is safe to relax if there is a longstanding learned stress response that has been programmed with a negative neuro-association. NuCalm provides the experience of deep relaxation coupled with emotional safety that allows the learned negative stress response that I have seen clinically with cancer patients to be interrupted so that a new and healthier response can be habituated.

Neuronal coherence requires for the circuitry between the old brain and the frontal cortex to be aligned. NuCalm works on the neuronal pathways which link the circuitry between thoughts and primitive emotions that have been wired for survival responses. NuCalm can create regular states of deep relaxation and comfort to attain the coherency in the brain necessary for regulating balance and homeostasis for health."

— Dr. Janet Hranicky

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"I see everybody at different stages of cancer but focus on people with breast cancer. I see a lot of the newly diagnosed patients, so they have either been to the surgeon, or I work them up, and I'm going to be the major captain for their care. My patients will get chemotherapy, they'll get radiation therapy, and sometimes get anti-estrogen therapies.

You have to understand, nobody likes to come see me, the oncologist. They don't want to, because everyone's afraid that "is she going to find something? Are my labs going to be normal?" So, people start having anxiety before coming to see me. Even if they are in remission, there's still a lot of underlying fear. According to my patients, their anxiety starts, maybe a week to a month before coming in for their appointment.

There is a tremendous amount of stress. How my patients experience their stress varies... either it starts low and escalates before the visit, or sometimes it's just constantly there until the visit is over. Everybody is affected by cancer. Not only the patient, but whomever the patient's living with - their spouse; their children. The person with cancer is not singled out. Cancer affects the entire family or the entire support system of that person.

What's interesting about somebody that's dealing with a serious illness, cancer or whatever, they are under, not only acute stress (the fight-or-flight response), but they're also under chronic stress. That fear and thought about cancer never really leaves them. We know that prolonged chronic stress wears down their immune system, all of their systems, to put it bluntly. To alleviate some of that chronic stress with the NuCalm system will help them. NuCalm is a way of getting them into a relaxed state, and we know they're going to get benefits from it. Patients who are dealing with cancer and going through chemotherapy, are forced to deal with a myriad of changes. When someone's going through

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chemotherapy, it would be great for him or her to experience a forced 'time out' from his or her reality with NuCalm. Whether or not we're talking about breast cancer, prostate cancer, lung or colon cancer it doesn't really matter. All these people are undergoing the same physiological stress, so certainly NuCalm will help anybody. It doesn't matter the type of cancer."

— Julie Taguchi, MD, Medical Oncologist and Hematologist

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"The ability of NuCalm to reduce sympathetic discharge, and its impact on the autonomic nervous system, is clearly a freestanding and noteworthy contribution to society and our high-paced, stress-filled lives. We know that every organ system in the human body is disturbed when sympathetic tone predominates excessively and chronically. It, therefore, seems logical to run with the research already in place and start measuring the possible reduction of predictable organ and systemic dysfunction with long-term NuCalm use. I believe with using NuCalm, 3 weeks of reduced sympathetic discharge should make significant improvements to the white blood cell population's ability to process foreign invaders in the lymph nodes. We have all experienced the sore throat and generally run-down feeling one can get after a few nights of bad sleep. The sympathetic discharge associated with sleep deprivation and long working hours under stress allows opportunistic viruses and bacteria to colonize and challenge our system.

When confronted with chronic inflammatory conditions, cancer, bacterial/viral infections, and other assaults to homeostasis, it becomes critical to optimize the immune system. I can imagine a myriad of uses for NuCalm to demonstrate the immune-boosting role of shifting to a parasympathetic-dominated tone."

— Tarman Aziz, MD

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"In my medical practice I see many people suffering from adrenal fatigue, as well as poor sleep quality. The path to adrenal fatigue is predictable… people are under a lot of stress. To deal with stress, the adrenal glands secrete stress hormones, the most famous one being cortisol. Every time the stressor occurs, the adrenal glands will secrete cortisol. If the stressor continues, the adrenal glands continue to secrete cortisol and, eventually, the adrenal glands fatigue. Then the person's ability to handle stress is reduced, and he or she can't differentiate between big stress and little stress. They begin to overreact to little things and later are left to wonder, "what did I do that for?" When the adrenal glands are tired, you're tired, mentally, physically, and emotionally.

I realized early on with NuCalm that the technology has huge advantages to promoting sleep, reducing stress, and promoting an overall sense of well being. When we treat patients with NuCalm we consistently see a reduction in the stress response using HRV. It happens almost immediately. Patients love how relaxed they feel after experiencing NuCalm, and we can track the effect NuCalm is having on their health. It's simple… the healthier the autonomic nervous system is, the healthier the parasympathetic nervous system is, the more resilience the person will have against stress.

In addition to lowering stress, NuCalm also improves sleep quality. Sleep is the essential time when the human body regenerates, and recoups the energy that was lost during the day. It's also when the parasympathetic nervous system kicks in to repair the body. And the deeper the sleep, the more continual the sleep, the more we are able to rebuild our parasympathetic nervous system and our adrenals. With NuCalm, the healthier the parasympathetic nervous system will become, the better you are going to sleep, the longer you're going to sleep, and the deeper you're going to sleep. This is the key to health and our ability to prevent disease."

— Michael Galitzer, MD

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Professional Athletes

NuCalm is currently being used by professional athletes on 39 U.S. based sports teams and by professional golfers, tennis players, boxers, and MMA fighters. The athletes use NuCalm to manage stress, which in turn, improves muscle recovery, healing, and sleep quality. We collected data on several Chicago Blackhawks players over an 8-week period during the 2015 regular season.

Solace Lifesciences collected data points using the single lead ECG device to measure the physiological impact of NuCalm. The research protocol follows:

1. Apply the single lead ECG to the subject's chest.
2. Allow the subject to sit comfortably for a 15-minute baseline assessment to capture their current stress level and autonomic nervous system balance.
3. Apply the NuCalm system and allow the subject to experience NuCalm for as long as they need, with a minimum of 30 minutes. Subjects experience NuCalm in a comfortable chair with a blanket.
4. Once the NuCalm experience is over, the subject removes the NuCalm system, as well as the single lead ECG device.

The data sets from one of the professional athlete subjects are provided on the folowing pages. This research subject has been using NuCalm regularly for more than two years.

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Professional Athlete ECG Data

Figure 7: 15-minute baseline

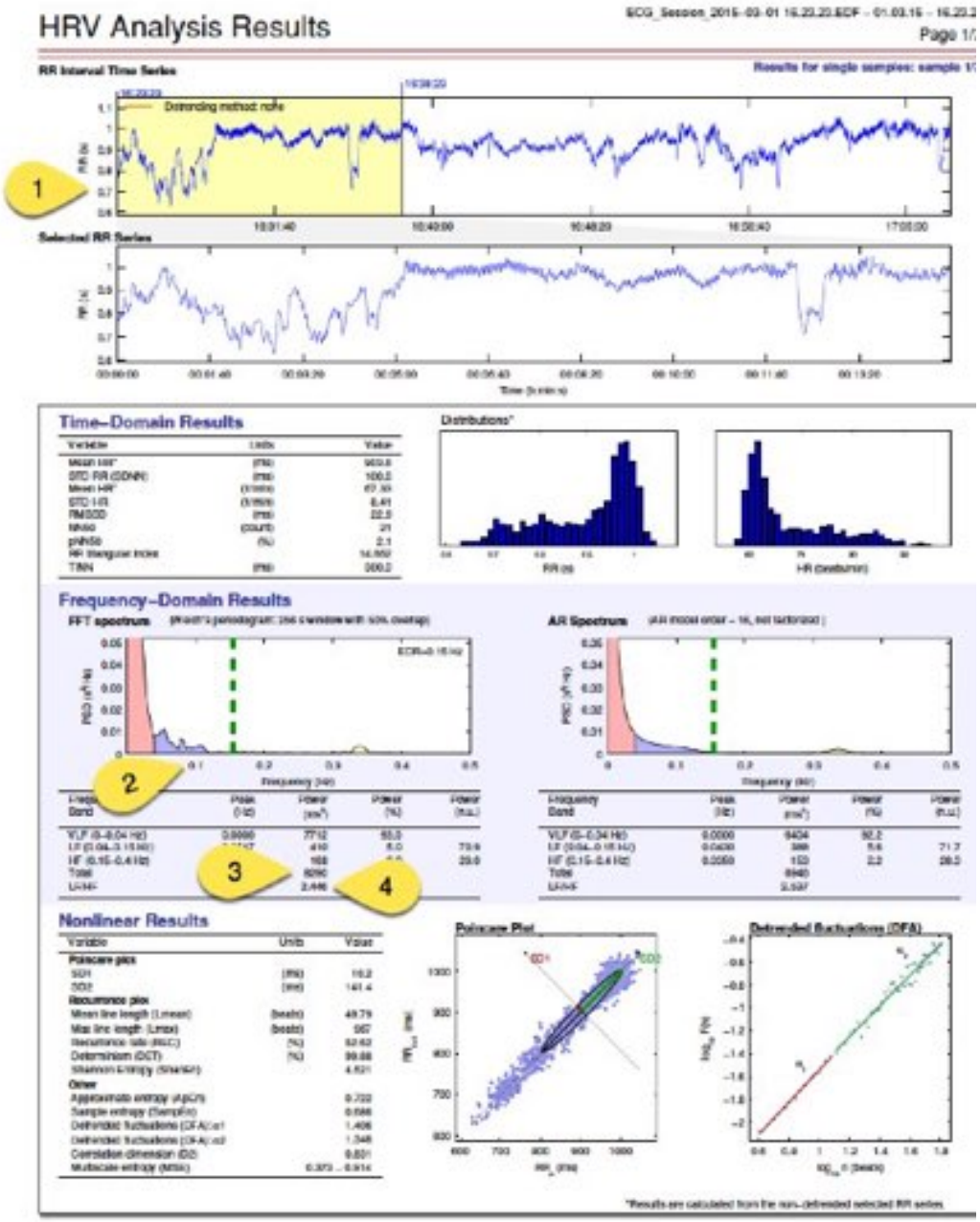

Figure 7 Summary

1. 15-minute baseline
2. 0.1 Frequency-Domain activity
3. Total power spectrum = 8290
4. LF/HF ratio = 2.446

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Figure 8: First 5 minutes on NuCalm

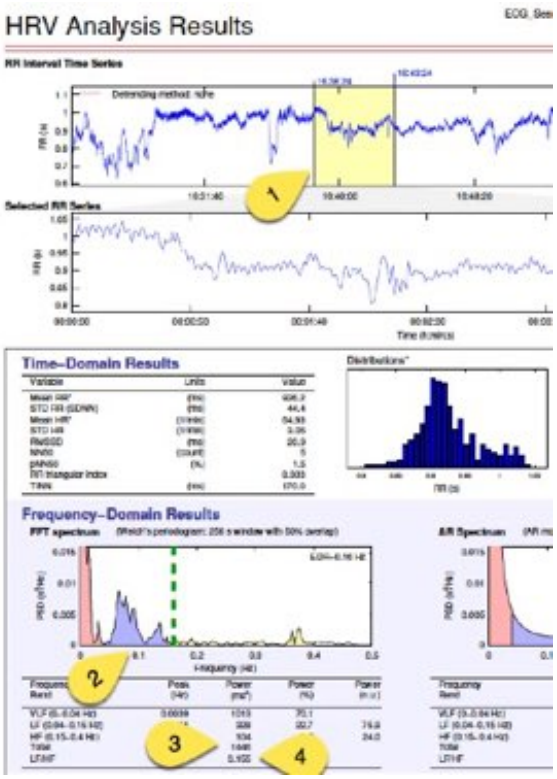

Figure 8 Summary

1. Initial 5 minutes on NuCalm
2. 0.1 Frequency-Domain activity
3. Total power spectrum = 1446
4. LF/HF ratio = 3.155

Figure 9: 10 minutes on NuCalm

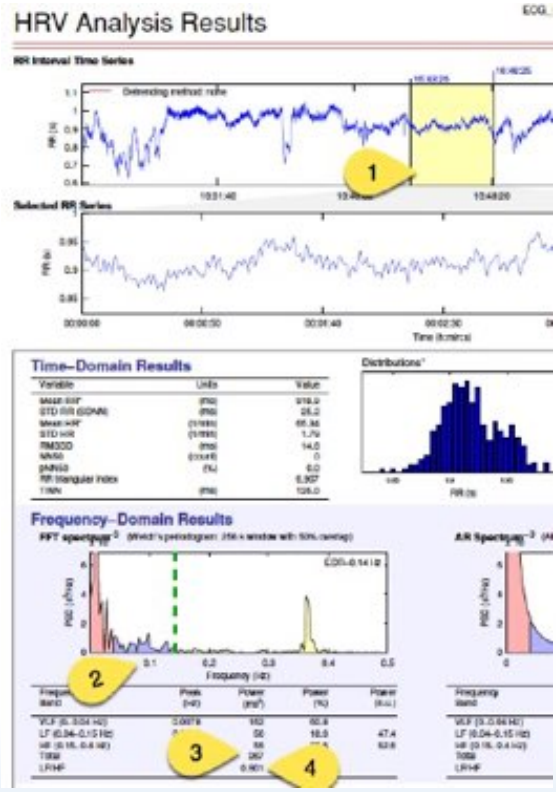

Figure 9 Summary

1. 10 minutes on NuCalm
2. 0.1 Frequency-Domain activity
3. Total power spectrum = 267
4. LF/HF ratio = 0.901

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Results

The LF/HF ratio quantifiably illustrates the balance of the sympathetic nervous system (LF) and the parasympathetic nervous system (HF). Sympatho-vagal balance is imperative for professional athletes as they need high cortisol/adrenaline sympathetic dominance to compete at extreme levels, yet they also need parasympathetic nervous system dominance to optimize muscle recovery, healing, and sleep quality. The subjects consistently showed a profound decrease in the LF/HF ratio across each 5-minute segment and for the duration of each NuCalm experience, indicating optimal healing. The only anomaly to the decrease in LF/HF ratio is when a subject falls asleep during NuCalm, which elicits a spike in sympathetic nervous system activity to maintain a heart beat. When subjects fell asleep during their respective NuCalm experiences, the sleep activity did not last long, typically 1 to 4 minutes before the subject comes up from sleep and experiences deep relaxation associated with theta brain wave function.

The data shows a consistent pattern regarding NuCalm's impact on the autonomic nervous system. Within 1 to 5 minutes of experiencing NuCalm, the subject experienced a rapid descent into parasympathetic nervous system dominance and hypnogogic dissociation reflected by the immediate and profound reduction in the Total Power Spectrum (ms^2) and the LF/HF ratio. The Total Power Spectrum within the Frequency-Domain Result Fast Fourier Transform (FFT) algorithm is a quantified measure of the subject's autonomic nervous system (sympathetic nervous system and parasympathetic nervous system), where the sympathetic tone is a more significant contributor to the Total Power Spectrum. This subject's Total Power Spectrum rapidly decreased, continued to decrease across each 5-minute segment, and maintained reduction throughout the entirety of each NuCalm experience. The Total Power Spectrum was reduced by 82% in the first five minutes. The Total Power Spectrum was reduced by over 96% in 10 minutes on NuCalm (see Figure 7 and Figure 9 to illustrate the change from 8290 to 267).

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"... it is not strength of the musculature, but relaxation of muscles to produce additional load when required, allowing muscles to work at optimal sarcomere length. NuCalm is a significant advancement and amazing tool for quickly relaxing muscles throughout the entire body."

— Dr. Norm Thomas, DDS, PhD, O. Path. MD, B.Sc., Oxford Fellow, Director of Neuromuscular Research at LVI Global

"You could just tell that these guys were just more relaxed and they would tell me that. We want our players to play 'intense' not 'tense' and NuCalm is a way for them to just relax and deal with frustrations. NuCalm was very beneficial because it clears your head and allows you to start from scratch. The crucial part of this game is recovery. That's why I think NuCalm played an important role for us, especially during the playoffs."

— Mike Gapski, Head Trainer of the Chicago Blackhawks
2015 and 2013 Stanley Cup Champions

"NuCalm has proven to be a remarkably reliable tool for helping to modulate cortisol levels and inflammation. NuCalm quickly takes athletes out of their catabolic breakdown mode and shifts them into a healthy build-up mode, so they can heal and recover as quickly as possible. When athletes are in a balanced nervous system state, they respond instinctively instead of reacting impulsively, and thereby can perform at their highest level. I count on NuCalm personally and so do our athletes ... they have been using it for over 5 years and love it."

— Julie Burns, MS, RD, CCN, Founder and CEO, SportFuel, Inc.

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Key Observations

- NuCalm predictably and quickly "flips the switch" from high cortisol and adrenaline to deep relaxation. This allows the body to activate the brain-heart-lung connection to optimize diaphragmatic breathing, oxygen rich red-blood cell flow, optimal healing, and muscle recovery.
- NuCalm provides deep relaxation throughout the body, minimizing the negative consequences of lactic acid build up and, most importantly, reduces inflammation and cytokine storms, resulting in an increased rate of healing.
- During the regular season, and especially during the playoffs, athletes travel across multiple time zones, which impairs performance. NuCalm provides the neurophysiology and biochemistry necessary for improving sleep and managing circadian rhythm dysfunction. By restoring autonomic nervous system balance, NuCalm rapidly and predictably restores the body's natural rhythms, allowing athletes to perform at their best.

The professional athlete subjects observed the following during their 8-week NuCalm study:

- Improved healing and muscle recovery
- More efficient removal of lactic acid; "felt loose and relaxed, even after an exhausting workout."
- Significant improvement in sleep quality and minimal jet lag, if any.
- Relaxed feeling during games despite the pressure; "head felt more clear and focused."

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