

Determining the Effects of NeuroConnect™ Spray on Individual's Strength: A Pilot Study

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

Abstract

In total, 32 individuals were put through the same 25-30 minute vigorous workout, using Medex selectorized equipment, to eliminate the chance for the warm-up effect to impact the results. They were then examined on an ARX machine. The machine gave accurate leg press Max Power and Max Force readings before and after using a Neuro Connect treated shirt. The average change in Force across all participants between the control test and when wearing the Neuro Connect treated shirt increased by 12.4%. A T-test yields a ($P < .0005$). There was a subsequent increase in the average Max Power generated across all participants, equating to 9.7% ($P < .0005$).

Introduction

The primary hypothesis of this paper is that specific light wave patterns can influence the neurological system of human beings, and in the case of Neuro Connect devices, wearing them makes the entire system respond more efficiently. This also implies that, at certain times and under varying circumstances, parts of the system function at a lower level than physiologically possible at the level of the proprioceptive nerve components. In other words, decreased proprioceptive feedback leads to reduced muscle response and inadequate muscle response leads to joint strain. In 2010, the NeuroConnect effect was discovered and in 2017 with collaboration with physicist Dr. Igor Nazarov, Neuro Connect devices were developed and presented to public. To better understand the effects and underlying mechanisms of the Neuro Connect devices, private studies were done by NeuroReset, and published on the company's website. Patients with an inadequate response to the assessment techniques before wearing devices appeared to perform normally when they attached the Neuro Connect devices to their shirt and shoes. The results were supported studies using APDM wearable movement and kinematic sensor technology. Multiple trials were run on patients and the data was collected to determine their ability to stand still for 30 seconds. The amount of side-to-side sway (coronal sway) and front to back sway (sagittal sway) was first recorded using APDM. The combination of coronal and sagittal sway was collated by the APDM technology to give a computer readout of the entire ellipse formed during the 30-second test. Seen in Figure 1 below, the grey region is considered a normal range of motion, the blue line describes the average outer range of patient movement, and the black line is the actual patient movement. Next, the subjects were tested using wearable Neuro Connect technology. The ellipses in Figure 1 demonstrate the before and after changes, showing the effects of 3 different Neuro Connect devices on sway. The studies were replicated many times and presented as a hypothesis that bio-photon emitting devices somehow improve proprioception.

At present, proprioception can be defined as the cumulative neural input to the Central Nervous System from specialized nerve endings called mechanoreceptors, which are located in the joints, capsules, ligaments, muscles, tendons, and skin.¹ Proprioception alludes to the perception of tension/force, body/joint movement, and the relative position of limbs. Proprioception is generally divided in the sub modalities; sense of tension (resistance), sense of movement, and joint position sense. Sense of resistance represents the ability to appreciate force generated within a joint. Sense of movement refers to the ability to appreciate joint movement, including the duration, direction, amplitude, speed, acceleration and timing of movements. Joint position sense determines the ability of the subject to perceive a presented joint angle and then, after the limb has been moved to actively or passively reproduce the same joint angle. All three modalities can be appreciated consciously and unconsciously, contributing to automatic control of movement, balance, and joint stability, and thus being essential to carry out daily living tasks, walking, and sports activities.² Any improvement of proprioceptive ability can greatly assist a person with performance difficulties or sub-optimal performance. Neuro Connect devices contain specific wave patterns that transmit particular corrective biophotons to the wearer with the goal of improving proprioception.

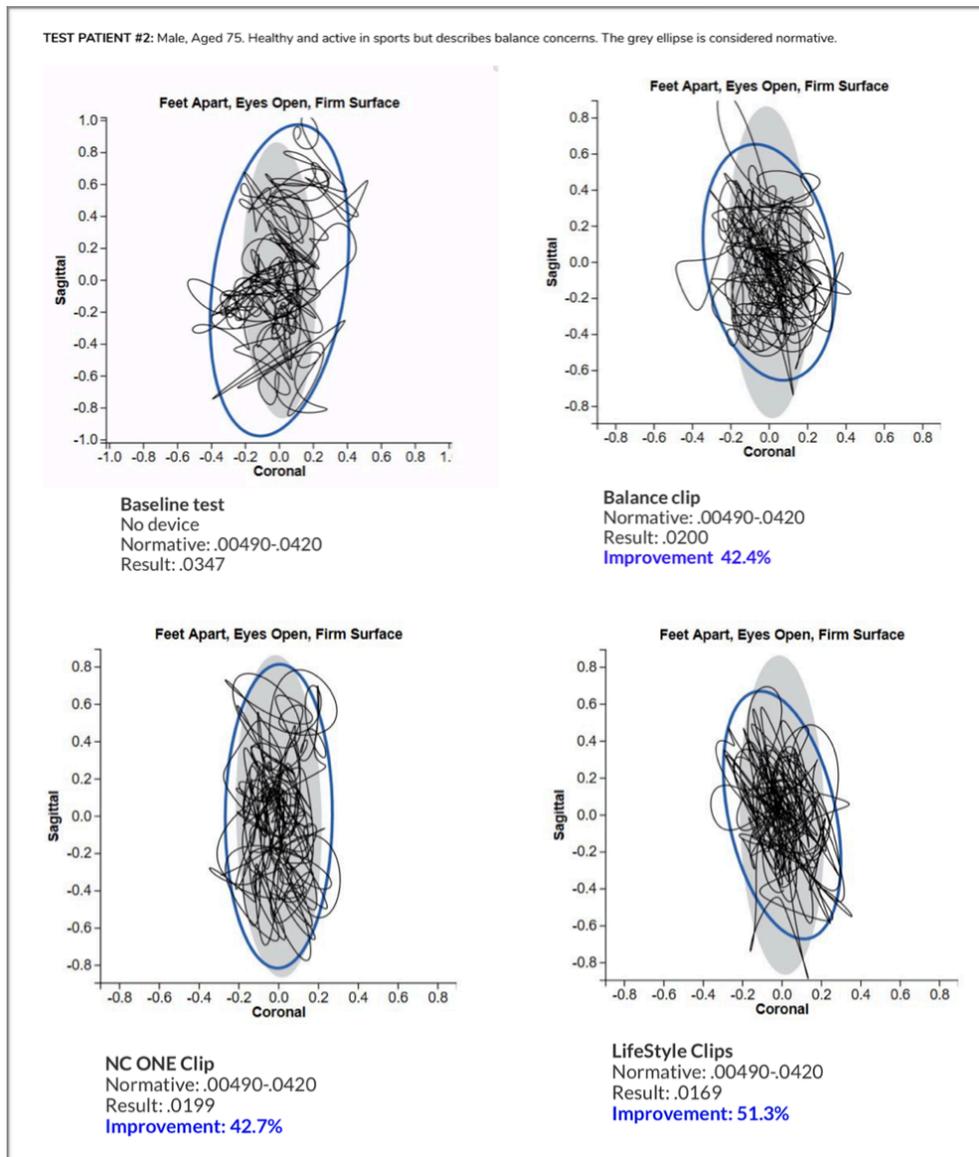
Evidence for the existence of coherent excitations in biological systems came from the study of biophotons.^{3,4} All organisms emit and store light from a coherent photon field within the living system. The concept of a morphogenic field was introduced into biology by Alexander Gurwitsch (1874-1954). He examined the morphogenetic movements of large cell collectives during formation of the different organs. He concluded

Determining the Effects of NeuroConnect™ Spray on Individual's Strength: A Pilot Study

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

that the cells move and re-orientate as if being attracted by some unknown force. The advent of genetics provided, for some, an explanation for this finding via the discovery and understanding of Hox genes, SHH, and more. However, in recent times geneticists and biologists believe there is some unknown connection between the code within our cells and the theory of the morphogenic field that may be generated as cells replicate. The spontaneous self-assembly of a living being into intricate patterns of functional form largely remains a mystery that scientists are quickly unraveling. While most current research seeks explanations in terms of genetic and molecular activities, a viable alternative view already exists. Living organisms have the

Figure 1



capacity to behave as Electro Magnetic (EM) resonators, trapping within themselves EM fields in the form of spatial energy patterns. These patterned energy fields are called resonant modes and are a rich source of long-range information capable of guiding biological pattern formation from an early developmental stage. Focusing on plants, the so-called living crystals of the world, a comparison of tissue and EM resonant mode patterns reveals striking similarities. The concept of EM energy resonators is not limited to plants, but may extend to single cells, water droplets, other organisms, and whole planets.⁵ It was hypothesized that the internal electro magnetic field of biological systems is coherent and that this coherence plays a significant role in pattern formation of the biological system.^{6,7} Freely available MRI data of structural components of human brain from different universities were studied and used to build actual structural database of the brain, including neural network connectome data, blood vessel map, ventricles, cavities for cerebral-spinal fluid, and

Determining the Effects of NeuroConnect™ Spray on Individual's Strength: A Pilot Study

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

hippocampus regions of midbrain. A rigorous dielectric resonance simulation was run to verify the hypothesis that a scale-free resonance does exist in the material architecture of the brain. The conclusion of the study speculates that there may exist a unified geometric pattern hidden in the vibrational frequencies of the brain components, which hold important information for the brain's informational processing.⁸

While this is just scratching the surface on the available research regarding biological frequencies, light and wave patterns, and biophotons and how they might interact with human physiology, it provides a framework for the possible underlying mechanisms in which Neuro Connect devices might work through. In summary, the goal of our pilot study is to determine if the light resonating devices set to specific frequency patterns stimulate or upgrade sub-optimal proprioceptor response, as to be measured by the amount of force generated through an isometric leg press. Given the current availability of technology and measurement devices, we are unable to determine if the frequency patterns emitted by the devices operate within the dynamics which contribute to the morphogenic operation of cell structure or if the nature of devices acts upon to the actual architecture of the brain or if there is some other mode of operation.

Method

Thirty two (32) participants (17 male and 15 female) volunteered for the study at their local gym. All 32 individuals were put through the same 25-30 minute vigorous workout, using Medex selectorized equipment, to eliminate the chance for the warm-up effect to impact the results. Following the completion of the session, participants performed a 10-second isometric leg press on an ARX Alpha machine (see figure 2), which measured their power and force, with their eyes closed to prevent them from seeing the ARX display screen. Next, Neuro Connect was applied to the subject by having them wear a frequency-treated shirt. While wearing the Neuro Connect shirt, subjects retested the ten-second isometric leg press and the new data was collected. Post-Neuro Connect results were compared to the control results.

Figure 2



Results

Please see Table 1.

- 1) The Average Force (no shirt) denotes the average strength exerted during the initial 10 second leg press.
- 2) The Average Force (w/shirt) is the average strength exerted while wearing the treated shirt during the second 10 second test.
- 3) The Maximum Power (no shirt) is the result when not wearing the shirt while doing a leg press.

**Determining the Effects of NeuroConnect™ Spray on Individual's Strength:
A Pilot Study**

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

Table 1		ARX West Coast Study							
Name	M/F	Force		Power		Percentage			
		Average no shirt	Average w/shirt	Max no shirt	Max w/shirt	Increase/Decrease Force	Power		
A1	M	1190.8	1286.0	1366.4	1413.0	7.4%	3.3%		
A2	M	1173.1	1302	1464.3	1519	9.9%	3.6%		
A3	F	809.6	1150	685.8	1117	29.6%	38.6%		
C	F	459.6	672	594.9	816	31.6%	27.1%		
KV	M	567.1	533	639.9	638	-6.4%	-0.3%		
T	F	953.6	1170	1262.6	1318	18.5%	4.2%		
A4	M	886.4	937	970.7	1025	5.4%	5.3%		
C	M	3894.6	4376	1295.9	1325	11.0%	2.2%		
C2	F	597.5	745	827.8	945	19.8%	12.4%		
C3	F	358.1	415	440.2	478	13.7%	7.9%		
C4	M	717.4	944	764.5	1022	24.0%	25.2%		
C5	M	568.2	838	883.2	1111	32.2%	20.5%		
D1	F	348.2	422	399.1	463	17.5%	13.8%		
D2	M	758.6	778	891.2	902	2.5%	1.2%		
J	M	787.2	1156	987.6	1391	31.9%	29.0%		
F	M	572.9	614	600.9	656	6.7%	8.4%		
E	F	536.4	564	660.4	643	4.9%	-2.7%		
H	F	521.4	573	595.7	627	9.0%	5.0%		
J1	M	764.6	861	803.6	1029	11.2%	21.9%		
J2	M	1196.6	1273	1281.8	1338	6.0%	4.2%		
J3	M	614.4	707	747.0	805	13.1%	7.2%		
J4	F	453.5	509	507.6	571	10.9%	11.1%		
K	F	708.0	754	844.4	886	6.1%	4.7%		
L1	F	344.6	356	390.0	411	3.2%	5.1%		
L2	F	338.0	401	393.2	410	15.7%	4.1%		
K2	M	665.7	722	776.5	803	7.8%	3.3%		
M1	M	584.6	741	637.2	778	21.1%	18.1%		
M2	F	1177.7	1445	1440.0	1769	18.5%	18.6%		
O	M	561.4	574	597.6	587	2.2%	-1.8%		
R	F	324.2	312	393.6	381	-3.9%	-3.3%		
S	F	600.2	610	756.6	772	1.6%	2.0%		
T	M	767.4	878	874.2	966	12.6%	9.5%		
						Avg	12.4%	9.7%	

- 4) The Maximum Power (w/shirt) is the maximum power exerted during the second 10 second leg press while wearing the treated shirt.
- 5) The Percentage Increased Force is the percentage increase in the maximum force exerted during the exercise.
- 6) The Percentage Increase Power is the percentage maximum power exerted during the leg press.

Determining the Effects of NeuroConnect™ Spray on Individual's Strength: A Pilot Study

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

To give a clearer explanation of the results, we will describe A3 results, as an example. The equations for force and power are represented in Table 2. Prior to wearing the treated shirt she recorded a force of 809.6 ft/lb. When she wore the treated shirt her result was 1150 ft/lb which represented a 29.6% increase in force. Her maximum power increased by 38.6% from baseline, that is, without wearing the treated shirt. The average of all of the participants' values comparing baseline numbers to the results when wearing the treated shirt shows

an increase of 12.4% in force output and a 9.7% power increase. This was significant enough to deduce an influence of the treated shirt on the force and power of the participants.

As can be seen by Table 1, the average change in Force across all participants between the control test and when wearing the Neuro Connect treated shirt is an increase of 12.4%. A T-test yields a P Value of <.0005. In the adjacent column, it can be seen that there was a subsequent increase in the average Max Power generated across all participants, equating to 9.7% (P<.0005).

While the T-test is the preferred method of statistical analysis for our study, we realize that our data set does not fall under a normal distribution. While the T-test assumes a normal distribution of means, we cannot place full validity in this parametric test. To supplement this, we ran the data through the Kruskal-Wallis test, a non-parametric measure. Setting possible outcomes as simply an increase or a decrease from control to experimental, the Kruskal-Wallis test yields a P Value of <.0001 for both Force and Power. Taking it a step further, with the understanding that a small change in Force and Power generated from control to experimental could be due to random chance and variance, we performed the Kruskal-Wallis test again with three potential outcomes; an increase, a decrease, or no-change (defined as a change <5%). Again, the test revealed P Values of <.0001 for both Force and Power.

Table 2

$$F = m \cdot a \qquad P = \frac{W}{\Delta t}$$

Conclusions

It has been discussed that the two main functional goals of postural behaviour are postural orientation and postural equilibrium. Postural orientation involves the active alignment of the head and trunk in relation to gravity, support surfaces, the visual surround and internal references. Incorporated with this is sensory information from somatosensory, vestibular and visual systems. The extent to which these inputs are incorporated depend upon the goals of the movement task and the environment in which it is performed. Postural equilibrium is owed to the coordination of the body's movement strategies to stabilize the center of gravity during internal and external stability disturbances.⁹ A separate study done on stance stability and sway concluded that with repetition of a task, the body learns and adapts by shifting its mass toward a safer position, allowing for a minimizing of energy expenditure as a result of reduced corrections of sway.⁹ One can link that observation to our scenario to claim that the body may have engaged more core function or control when wearing the treated shirt. Similar results were seen in Neuro Reset's prior APDM study where there was a dramatic reduction in the coronal and sagittal sway when wearing Neuro Connect devices. Concurrently concluded was that forward leaning and decrease in sway are independently-occurring processes that might be a result of improved central integration of proprioceptive input.¹⁰ This allows us to extrapolate that improved awareness of body position through improved proprioceptive response might be responsible for the increased force and power output, which we will equate to an increase in strength. Given that the results

Determining the Effects of NeuroConnect™ Spray on Individual's Strength: A Pilot Study

Mike Hoban BSc., Alexander Woinski OMS-II, Chuck Moris PhD, Dr Igor Nazarov PhD Jan 2020

yielded participants recording higher output values in both categories when wearing the treated shirt, it is prudent to conclude that the resonant frequencies delivered by the treated shirt caused an increase in strength gain and also an increased workload. This all supports our hypothesis that Neuro Connect devices improve proprioception, but it cannot be definitively concluded that this was the method by which strength and workload increases resulted. Future studies will have to be directed more toward a proprioception-specific outcome. Regardless of the underlying mechanism, the results of the study showed an increase in the measured values of force and power by the participants when wearing the Neuro Connect treated shirt compared to their trials without. Because of the implications of these variables, Neuro Connect devices can prove to be beneficial for athletes of all kinds, as well as any individual or group looking to improve on or maximize physical performance for any purpose. If the underlying mechanism behind the improved results with Neuro Connect do relate to an increase in proprioception, an even wider audience can serve to benefit from the product.

References

- 1) **Ribeiro F, Oliveira J. Aging effects on joint proprioception: the role of physical activity in proprioception preservation. Eur Rev Aging Phys Act. 2007;4(2):71–76.**
- 2) **Riemann BL, Lephart SM (2002). The Sensorimotor System, Part I: The Physiologic Basis of Functional Joint Stability. J Athl Train 37(1):71-79.**
- 3) **Popp, F.A., Ruth, B., Bahr, W., Bohm, J. Grass, P., Grolig, G., Rattemeyer, M., Schmidt, H.G., and Wulle, P. (1981). Emission of visible and ultraviolet radiation by active biological systems. Collective Phenomena 3, 187-214.**
- 4) **Popp, F.A. (1986). On the coherence of ultraweak photonemission from living systems. In Disequilibrium and Self-Organization (C.W. Kilmister, ed.). pp. 207-230, D. Reidel Publishing Co., Dordrecht.**
- 5) **Alexis, P, Electromagnetic resonance and morphogenesis. D. Fels, M. Cifra and F. Scholkmann (Editors), Fields of the Cell, 2015, ISBN: 978-81-308-0544-3, p. 303–320.**
- 6) **Popp, F.-A. (2005). Essential differences between coherent and non-coherent effects of photon emission from living organisms. In Shen, X. and van Wijk, R., ed., Biophotonics– Optical Science and Engineering for the 21st Century, pages 109–124, New York. Springer.**
- 7) **Cifra, M. (2012). Electrodynamical eigenmodes in cellular morphology. Biosystems, 109:356366.**
- 8) **Complete Dielectric Resonator Model of Human Brain from MRI Data: A Journey from Connectome Neural Branching to Single Protein Pushpendra Singh, Kanad Ray, D. Fujita and Anirban Bandyopadhyay Chapter in Lecture Notes in Electrical Engineering · January 2019 DOI 10.1007/978-981-13-1642-5_63**
- 9) **Horak, F B Postural orientation and equilibrium: what do we need to know about neural control of balance to prevent falls? Age and Ageing 2006; 35-S2: ii7–ii11 doi:10.1093/ageing/afl077**
- 10) **Tarantola, J., Nardone, A., Tacchini, E., & Schieppati, M. (1997). Human stance stability improves with the repetition of the task: effect of foot position and visual condition. Neuroscience letters, 228(2), 75-78.**