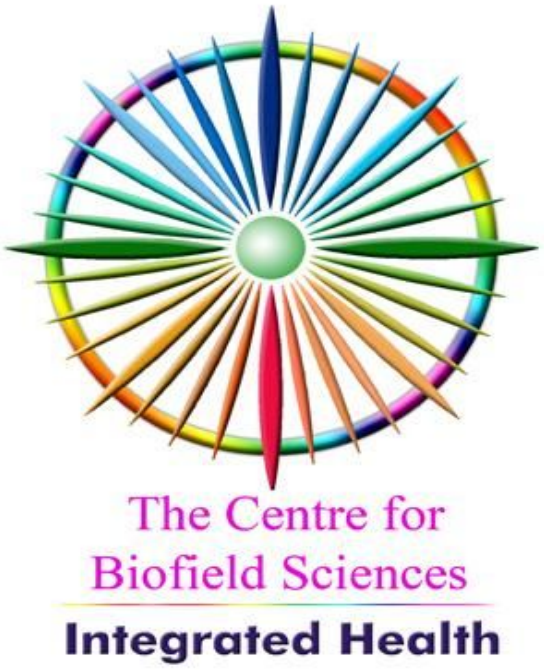

Experimental Study of LifeWave, Inc. X-39 patches

Summary and report

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Abstract

LifeWave, Inc. has developed a new patch called X-39 which is proposed to be a phototherapy product that stimulates the skin with specific wavelengths of light for the purpose of elevating the peptide GHK-Cu. The peptide GHK-Cu may effectively stimulate the natural healing process in the body. LifeWave, Inc. has developed X-39 patch with numerous intended benefits like improvement in overall energy, rapid relief from pain and improvement in overall functional vitality of the body. A pilot study was conducted with forty experimental and five control voluntary subjects who were studied before and after wearing the LifeWave, Inc. X-39 patch for a period of six weeks, using cutting edge non-invasive screening technologies like biofield imaging, electro photonic imaging and electro-interstitial screening. This set of devices allowed us to extract a broad spectrum of data ranging from physical, energetic and emotional aspects of the body non-invasively and efficiently. Statistical analysis of data revealed a highly significant increase ($p<0.0001$) in overall energy of subjects biofield and significant improvement ($p<0.05$) in the symmetrical distribution of energy between the organs. Also, a significant improvement ($p<0.05$) in green pixels after using the patches for 6 weeks showed positive changes in the biofield of the subjects. Further research is required with a larger population and a double-blinded placebo control group.

Keywords: LifeWave, Inc. X-39 Patches, Biofield, Interstitial fluid, Energy

LifeWave, Inc. X-39 patch

The X-39 patch is a phototherapy product that stimulates the skin with specific wavelengths of light for elevating the peptide GHK-Cu. Copper tripeptide-1(GHK-Cu) is a small protein composed of the three amino acids (protein building blocks) glycine, histidine, and lysine combined in a specific geometric configuration with the physiologically beneficial mineral (copper) (DeHaven, C., 2014). This tripeptide was first isolated from human plasma albumin in 1973 by Dr Loren Pickart. Pickart noticed differences in the levels of fibrinogen based on age. He additionally noticed that these differences stopped when the older liver cells were incubated in blood from younger people. In 1977, David Schlesinger of the Harvard University Chemistry Department confirmed that the growth modulating peptide isolated by Pickart was a glycyl-L-histidyl-L-lysine peptide. It is interesting to note that this peptide has also been found in saliva, urine, and collagen. It is also important to mention that none of the research around GHK has ever found it to cause any side effects. (DeHaven, C., 2014). The copper tripeptide-1 belongs to a group of emergency response molecules which are released during injury and come to the body's aid (DeHaven, C., 2014) It is naturally released by the body when there is any type of injury to tissue. Research has identified that this peptide is used to signal the beginning of the natural repair process. This benefit has specifically been documented through research for post-laser or surgical wounds, ischemic, burns, skin or hair transplants, and diabetic ulcers. Diabetic wounds healed three times faster in the presence of Copper tripeptide-1. Time to re-epithelialization is shortened (DeHaven, C., 2014). The copper tripeptide-1 has been suggested to have a potential therapeutic role in age-related neurodegeneration and cognitive decline. It improves axon survival and maintenance of nerves. (DeHaven, C., 2014). The tripeptide has also been demonstrated to improve tissue remodelling. It

increases keratinocyte proliferation and normal collagen synthesis, improves skin thickness, skin elasticity and firmness, improves wrinkles, photodamage and uneven pigmentation, improves skin clarity, and tightens protective barrier proteins (DeHaven, C., 2014). This has an impact on both scars and other effects of damage to the skin, and natural ageing processes. The effects of tissue remodelling also seem to have an impact on cancerous cells. The fact that GHK was able to suppress 70% of genes involved in the development of an aggressive metastatic form of colon cancer indicates that GHK is capable of the regulation of various biochemical pathways on a gene level and it seems to be resetting the gene activity back to health, which leads to the improvement of tissue repair. (Pickart, L., 2012). GHK-Cu also has a demonstrated impact on other organs in the body after they have been damaged. A collaborative study conducted by scientists from Boston University, University of Groningen, University of British Columbia, and University of Pennsylvania established that the GHK peptide reverses the gene expression signature of COPD, which is manifested by emphysema, inflammation, lung tissue destruction, and significant reduction of lung capacity (Pickart, L., 2015). It is also important to note that the level of GHK is about 200 ng/mL(10−7M) at age 20 but declines to 80 ng/mL by age 60 (Pickart, L., 2015). This likely explains the increasing impact on ageing. It would also suggest that increased levels over time of GHK-Cu would have a positive effect on both life expectancy and ageing.

Specific aim

The aim of the pilot study is to examine a number of claims for the product. Here are common experiences people have with the X-39 patch:

- Improvement in energy
- Very deep sleep
- Rapid pain relief
- Rapid recovery from exercise
- Improved sports performance
- Improved cognitive function
- Improved libido
- Accelerated wound healing
- Healing of old injuries
- Tightening of the skin

Devices used

Multiscan Pro

Technologies and functions (theoretical basis):

Galvanic skin response and sudomotor function

The Galvanic skin response device measures the electrical conductance of the skin, from the sweat glands. The sudomotor sweat glands are controlled by the sympathetic nervous system. The GSR evaluates the sweat gland response (sweat rate) to electrical stimulation. The response is related to the sympathetic system and sudomotor level activity. Sudomotor test gives skin blood flow and C fiber density.GSR is a measurement of 11 pathways of the body using 6 electrodes from anode to cathode and cathode to anode. Send current through electrode, through interstitial fluid of body pathway, then exits and makes stimulation of cholinergic fiber of the sweat gland and release of norepinephrine, the sweat gland releases

sweat, the sweat goes to the electrode and you have conductance proportional to the sweat. The impedance signal travels through sweat glands so placement of electrodes important (areas with more sweat glands) DC cannot go through the cell or through the vascular, only interstitial fluid (ISF). Two measurements are taken for 11 pathways, 22 total measurements are then applied to Fast Fourier Transform (same math formula applied for HRV) and have 3 frequencies corresponding to the variability of the conductance. Sudomotor analysis measures the sweat rate response to electrical stimulation. The response is estimated from the conductance values measured between different pairs of metal electrodes. The sweat rate response is measured in Conductance values expressed in micro Si (microSiemens) units. Fig. 1 shows the mechanism of sudomotor function and galvanic skin response.

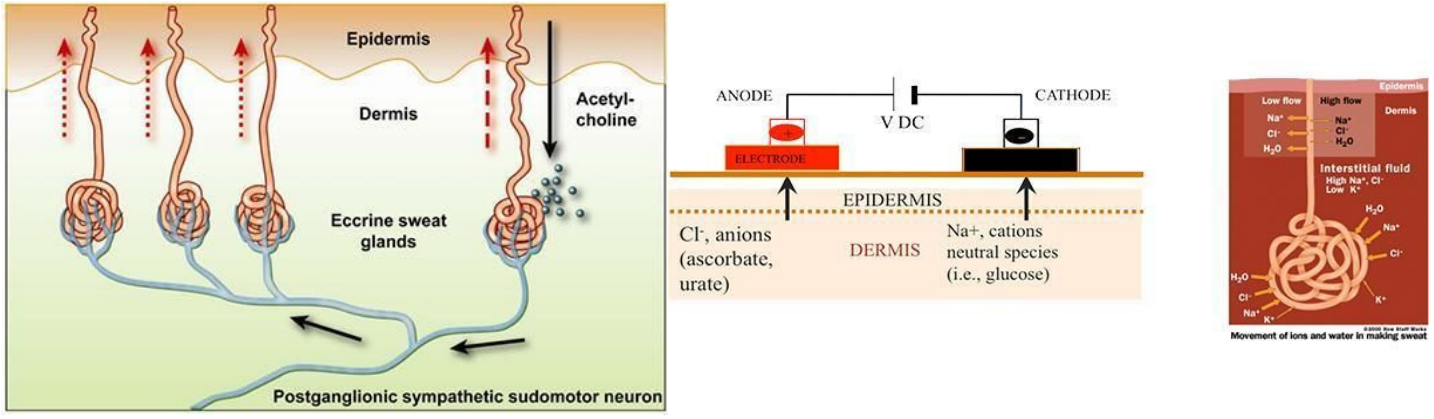


Fig.1 Sudomotor function and galvanic skin response

Bioelectric impedance measurements

Bioelectric impedance measurements (BIM) represents a wide range of old and new non-invasive technologies and methods, where a very small electric current is applied to the body via one or more surface electrode and the resultant current passing through the body, is detected at other surface electrodes placed elsewhere on the body. A drop in voltage occurs as the current encounters impedance or

resistance inherent in the fluids and tissues it passes through as it courses through the various physiological “compartments” of the body. These compartments include the bloodstream, the intracellular space, the lymphatic system, the interstitial space, and others. This drop in voltage provides indirect information about the physical and chemical properties of the compartment(s) that the current passes through.

Multiscan pro is a programmable electro-medical system, which is scientifically proven and clinically validated as an efficient and non-invasive medical device that measures physiological parameters and produces detail reports with 89 % repeatable accuracy. It measures the conductivity of interstitial fluid between the cells. The bioimpedance technology is very similar to ECG and EEG, but instead of supplying information for brain or heart only, Multiscan pro measures electro-physiological properties of 22 different volumes within the body and produces data for 69 different physiological parameters. Successive measurements are made with weak current low frequency (700 Hz) between six tactile electrodes placed symmetrically on the forehead, hands, and feet of the subject. Each electrode is alternatively cathode and anode (bipolar mode from the anode to cathode), which permits the recording of the resistance (Law of Ohm) of 22 segments of the human body. The weak current with low frequency (700 Hz) specifically passes through the interstitial fluid compartment. The interstitial fluid (or tissue fluid) compartment represents approximately 16% of the body’s total water. Interstitial fluid is extracellular water and solutes surrounding cells but is located outside the bloodstream and lymphatic system. Interstitial fluid forms the microscopic interface between cells and capillaries and presents a specific biochemical composition and a low protein concentration.

In one second, each of the body’s 22 segments is measured 32 times with a Start Point Average (SPA) and an End Point Average (EPA). Therefore, the total data is 704 pulses per measurement. The measured resistances are transmitted with a

numeric form for each segment, to an informative program. The EPA resistance values are converted to conductivity (C = 1/R), incorporated in a graph of the conductivity of the 22 segments called an Electro Scan Gram (ESG). The ESG was converted to the second derivative ESG (SD ESG) graph displayed in Fig. 3. The mathematical calculation of the standard deviation of the conductivities (SDC) is related to the tissue fluid Na+ concentration, according to the Electrode Polarization Impedance (EPI) technique.

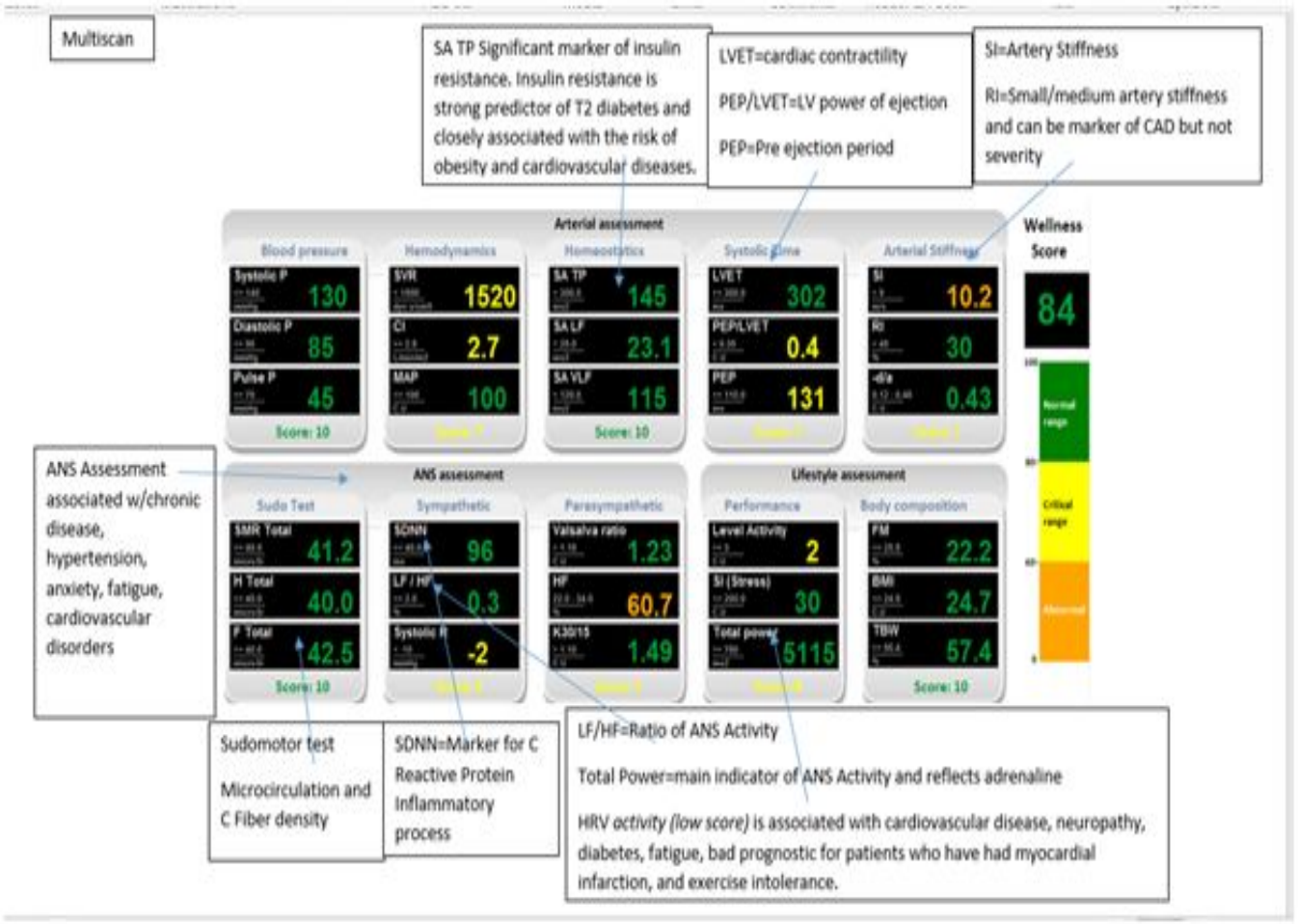


Fig.2 Wellness score shows cumulative assessments of various parameters shown above.

Fig. 3 SD ESG graph showing the average value of the 22 segments of the ESG graph at point 0 on a scale of -100/+100 (KOhm, μA, and μSiemens).

The difference between EPA and SPA is the electrical dispersion of the current into the tissue. It corresponds to the morphology of the interstitial fluid and increases in cases of swelling from the cells or from the blood vessel. Therefore:

EPA –SPA = Interstitial Fluid Volume (IFV)

Elevated IFV is found in cases of ischemia/hypoxia, acute inflammation and tissue destruction. Low IFV occurs in cases of cells growth or relative tissue density increased (swelling). A SpO2 monitor is placed on the fingertip to detect changes in heart rate, oxygen levels, as well as, cardiac output. Fig. 2 shows the Wellness Score which is a composite score derived from the Arterial assessment, ANS assessment and Lifestyle assessment scores which includes Lifestyle and Body Composition scores. Fig. 4 shows the extended ANS assessment (Sympathetic / Parasympathetic systems) window.

Fig. 4 Multiscan Pro comparison data of sympathetic and parasympathetic system.

Bio-Well (EPI\GDV)

Bio-Well is a revolutionary tool based on Electro-Photonic Imaging and Gas Discharge Visualization technique (Kirlian effect) made especially for express-assessment of the emotional and energetic state of a person. The Bio-Well is developed by Dr Konstantin Korotkov. An electric impulse stimulates a biological subject and generates a response of the subject in the form of photon & electron emission. The glow of the photon radiation owing to the gas discharge generated in the electromagnetic field is transformed by an optical & charge coupled device systems into a computer file. Subjects were required to put each fingertip on a quartz plate and an image displaying the photons emissions is then analyzed. GDV Technique is the computer registration and analysis of electro-photonic emissions of different objects, including biological (specifically the human fingers) resulting

from placing the object in the high-intensity electromagnetic field on the device lens.When a scan is conducted, a weak electrical current is applied to the fingertips for less than a millisecond. The subject's response to this stimulus is the formation of a variation of an "electron cloud" composed of light energy photons. The electronic "glow" of this discharge is captured by the camera system and then translated and transmitted back in graphical representations.

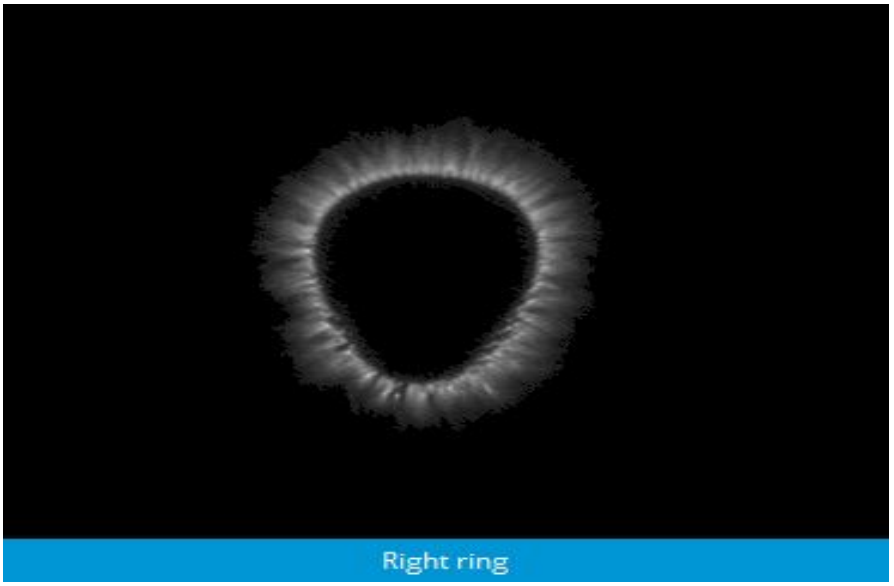


Fig. 5: Example of Bio-Well: (a) photonic emissions captured from a fingertip

Fig. 5(a) shows an image of a fingerprint and the corresponding aura as produced by the EPI\GDV software. Photonic emission interpretation of energetic distribution in various systems of the body by Bio-Well software as shown in Fig. 6. For this study, the energy, organ balance and L\R symmetry of the aura were analyzed for balance and vibrancy.

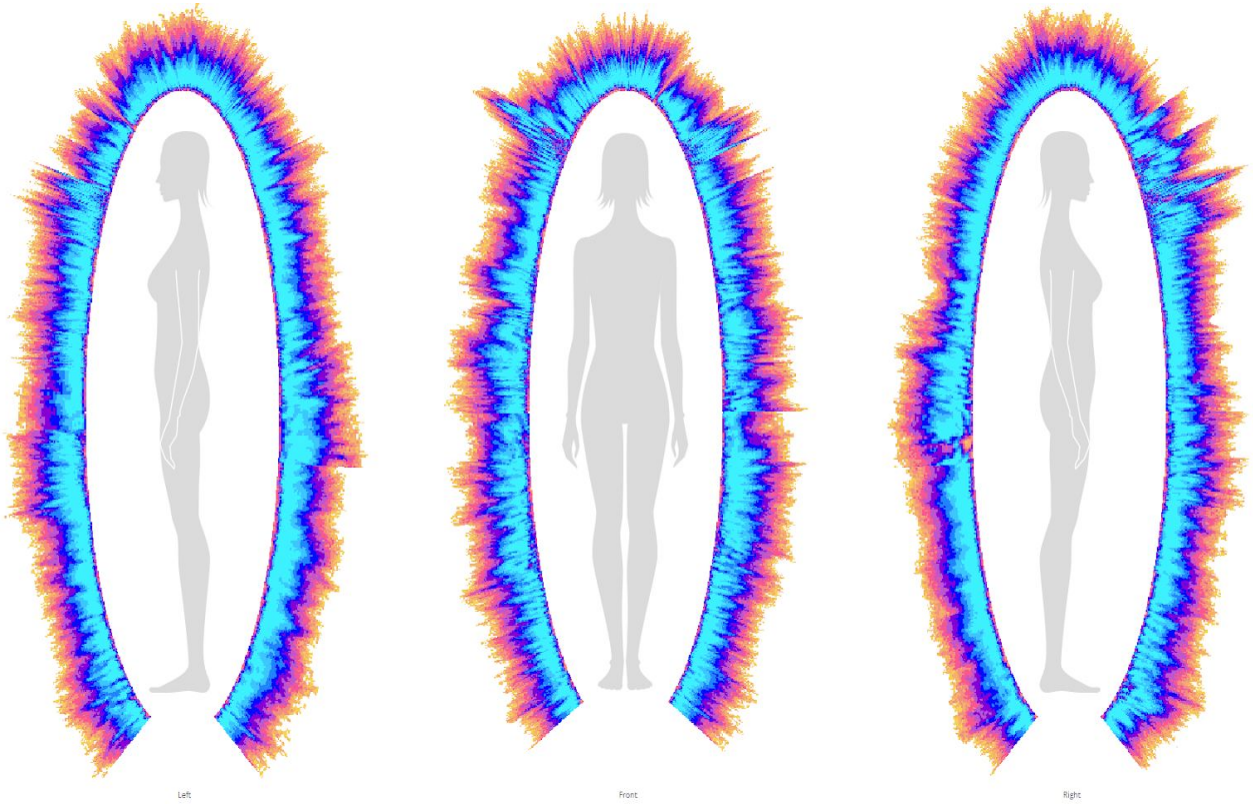


Fig. 5: (b)Energy field around a subject in the Bio-Well software.

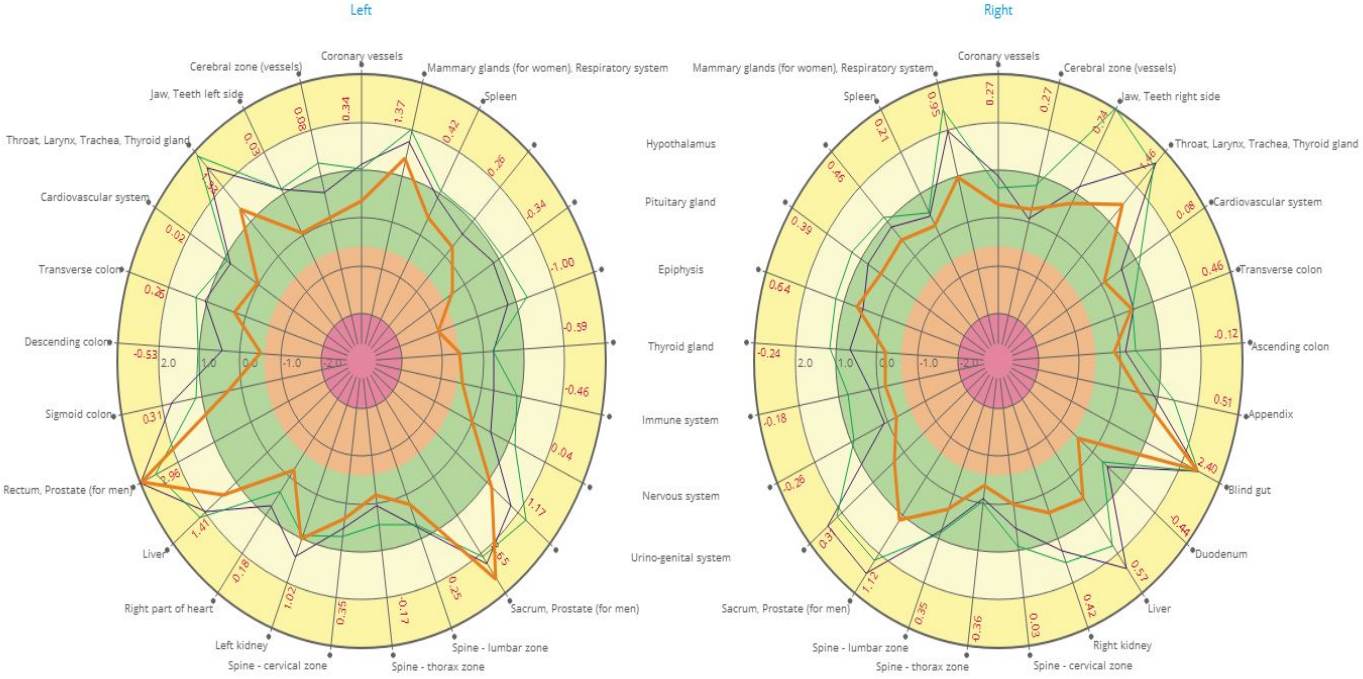
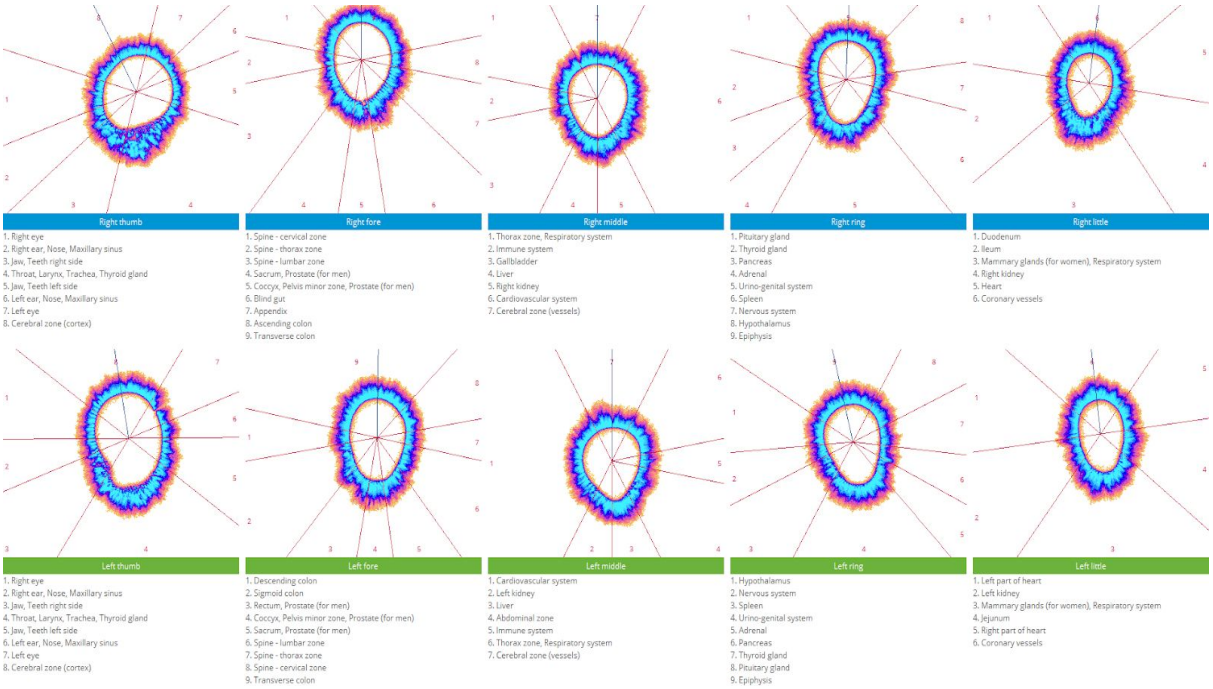


Fig. 6: (a)Photonic emission interpretation of energetic distribution in various systems of the body by Bio-Well software.

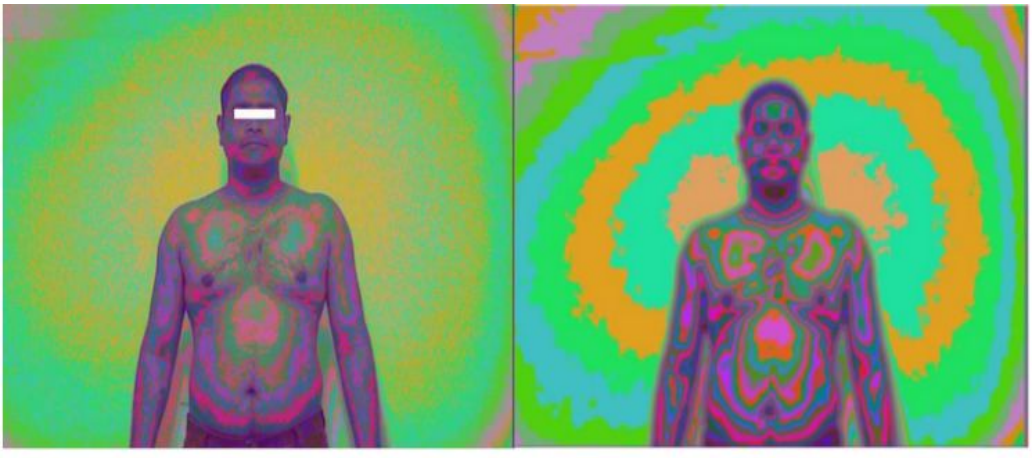


(b)Ten finger tip images and organs associated to each finger.

Biofield Viewer (BV)

Biofield Viewer 3.5 (BV) is an advanced imaging technology that reveals light interference patterns on and below the skin's surface. The Biofield Viewer software combined with the controlled imaging environment allows for visualization of the light photon interactions between the light source and the human biofield. The Biofield Viewer program compares the reflected rays with the incident rays and then re-codes them and produces a biofield image. The system identifies the intensity of light within the image and then gives the photons a designated number relating to colour in the visible spectrum. Thus it is a digital encoding system and the smallest differences in the density of photons is recorded and viewed on a computer screen using colour coding. Light striking the physical body may be reflected or absorbed. The various intensities of light differ on and around the body and Biofield Viewer allow these differences to be seen. The participant is exposed

to a standardized lighting environment and should be disrobed with all jewellery removed to maximize skin exposure and minimize image artefacts. A white, matte wall provides a monochromatic background against which the BV colours are most clearly highlighted. A digital camera is used to detect the interference of biophotons emanating from the subject with the light produced from the standardized lighting system. The BV software measures the absorption and reflection of light on the skin's surface and surroundings then display a composite image of the accentuated interference gradations on the screen. The second set of biofield images are placed through a filtering software the Chakra Viewer application of the software introduces filters which smooth the data sets into distinct bandings. This process allows for a closer investigation of the chakras and emotional aspect of the biofield. The Chakra Viewer is being widely used in research to monitor the effect of investigation of these images broadens the scope of understanding of emotional, psychological, and spiritual well being. The system reveals homeostasis in the biofield, and the Chakra Viewer now reveals the chakra live and in colour. In analyzing a Chakra Viewer image, the functionality of the energy centres can be monitored. Much research has been conducted on the relationship between the endocrine glands and the chakras, as well as, the new branch of science entitled psycho-neuro-immunology.



(Left) Biofield Viewer **(Right)** Chakra Viewer

Fig. 7 An example Biofield Viewer images and Chakra Viewer mode

Methodology

The study was funded by LifeWave, Inc. with a small grant and done under the approval by Royal Pune independent ethics committee(RIPEC). Forty-five subjects aged between 40 to 65 years were randomly selected through word of mouth to take part in the study of the efficacy of LifeWave, Inc. X-39 patches, Out of which forty subjects were in the experimental group and five subjects served as control group. The data collection was done in three phases starting with the baseline on the day before the subject start wearing the patches, seconds set of scans were taken after 3 weeks and the final scans were done after 6 weeks from the baseline scan date. The primary data collections were done at Holistic care and cure ayurvedic clinic, Bangalore, Karnataka under the supervision of Dr Thornton Streeter and Dr Rachana Ghatol-Shetty. A member of the research team verbally explained the study and gave subjects the Informed Consent Form (ICF). Only persons who signed the ICF were be allowed to participate in the study. Six weeks supply of LifeWave, Inc. X-39 patches were given to the subjects in the experimental group. The subjects were instructed to stick the LifeWave, Inc. X-39 patches at the base of the back of the neck where C7 vertebrae protrude as shown in the Fig. 8. The subjects were instructed to wear a new patch every day for 12 hours during the daytime for 6 weeks. All the subjects were given an identification number to allow for protection of confidential information collected throughout the study.

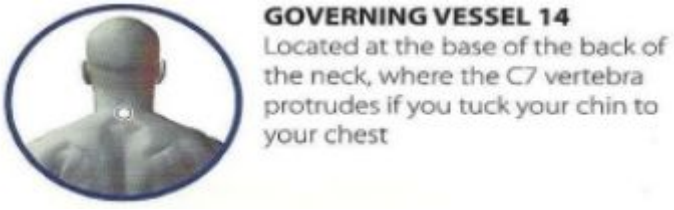


Fig. 8 Governing vessel 14

Biofield Viewer (BV)

The subjects were scanned before receiving the patch which serves as a baseline. Further images were taken at the end of the first three weeks and then at the end of six weeks. A white LED light array is used as the primary light source and the subjects were asked to stand against a plain white background, the image of the subjects were taken in the chakra viewer mode of the Biofield Viewer software 3.5. Pixel analysis of BV scans was done using Fiji (ImageJ) to measure red, blue and green pixels. The red pixels represent pooled or low energy. Green pixels stands for vital energy.

Bio-well (EPI\GDV)

The first baseline scans were taken before the subjects start using the LifeWave, Inc. X-39 and given a six week supply of the patches. The next scans were taken at the end of 3 weeks and 6 weeks. The subjects have to place all ten fingers on top of a quartz glass plate inside the bio-well device which captures the image of all ten fingers. The data is recorded is analysed by the Bio-Well 5.8.0.0 professional software. The results were compared to the baseline see the improvement in overall energy of the body, organ balance, L/R symmetry distribution of energy.

Multiscan Pro (MSP)

The initial full body assessment data will be collected in Multiscan Pro before the study to fix a baseline for comparing the data to find the improvements in the body after applying X-39 patch. Multiscan pro will record the Heart Rate Variability, Sudomotor function, Galvanic skin response, Digital wave pulse analysis, Bioimpedance and total body composition. The wellness score, vascular age and the Phase angle are the parameters considered for this study. Wellness score is a composite score derived from the Arterial assessment, ANS assessment and Lifestyle assessment scores which includes Lifestyle and Body composition score. Vascular Age provides a measure of the apparent age of the arteries when compared

with healthy people. Phase angle is the measurement of the capacitance of living cells when stimulated by 50-kilohertz alternating current(AC) causing a lag between potential and current. The value of Phase angle is directly proportional to the cellular health. The Multiscan Pro starts its procedure when the subjects place their hands and legs on the metal plate and four electrodes are connected to the forehead of the subject as shown in Fig. 9

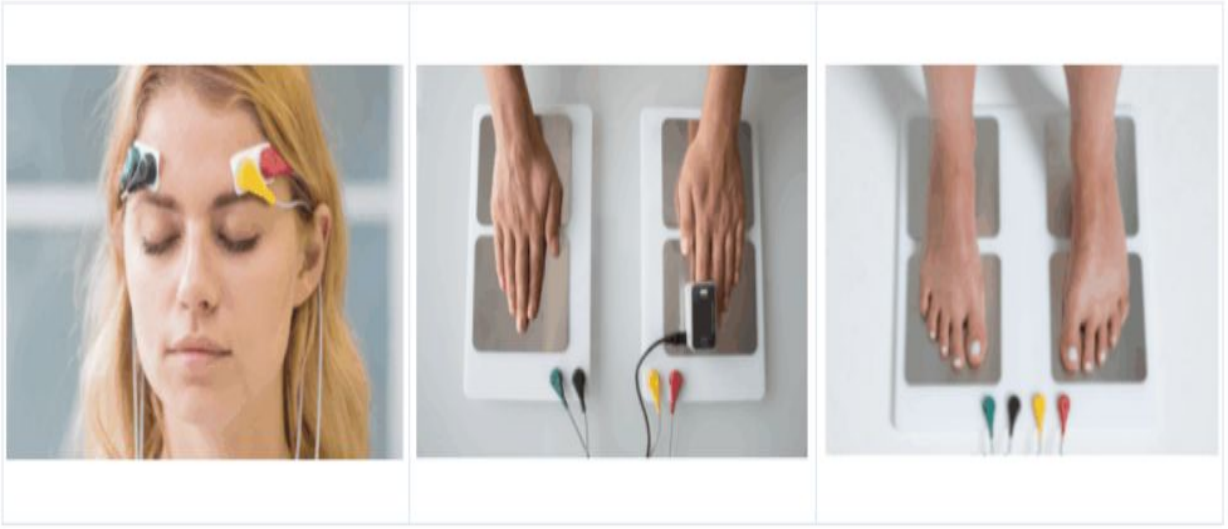


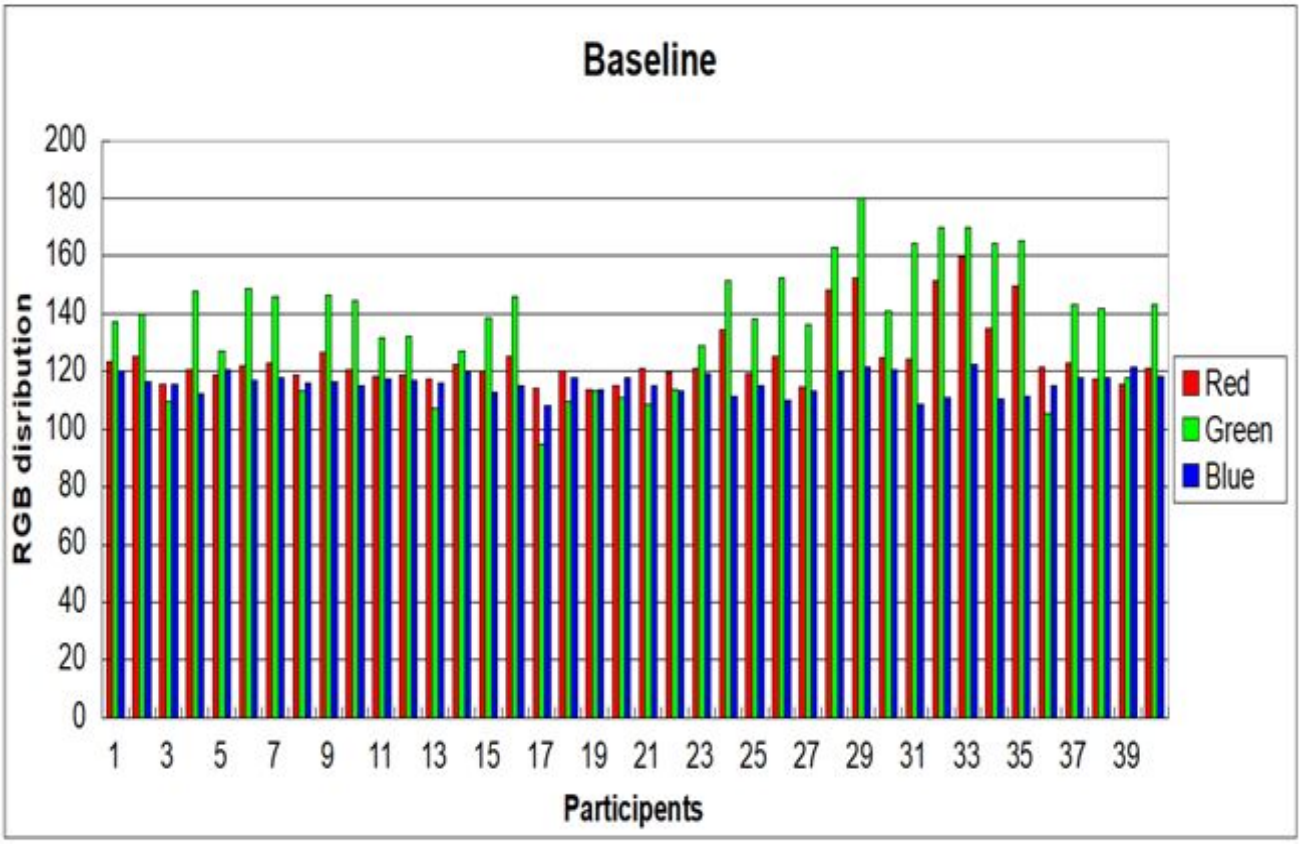
Fig. 9 Multiscan Pro for head electrodes and tetrapolar stainless steel plates for hands and legs.

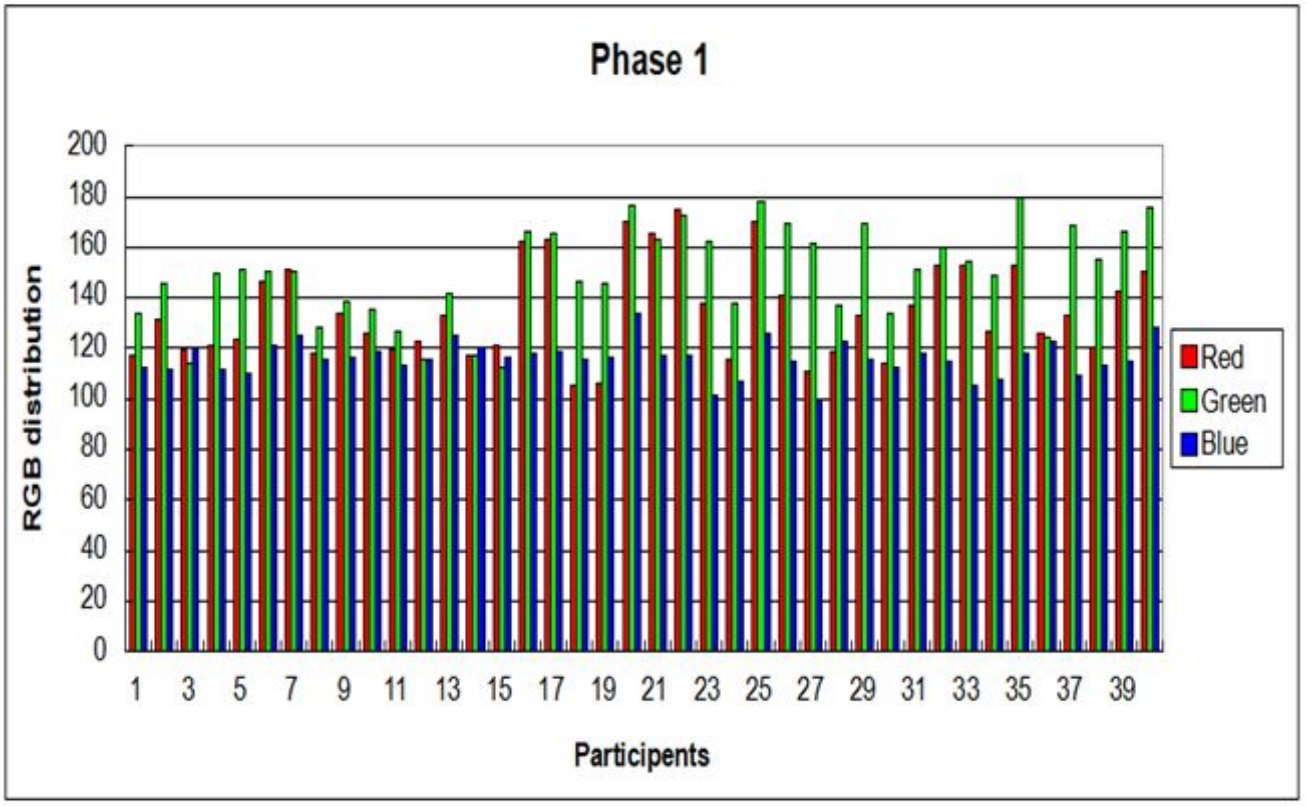
The Multiscan Pro has four stages in data collection which are as follows,

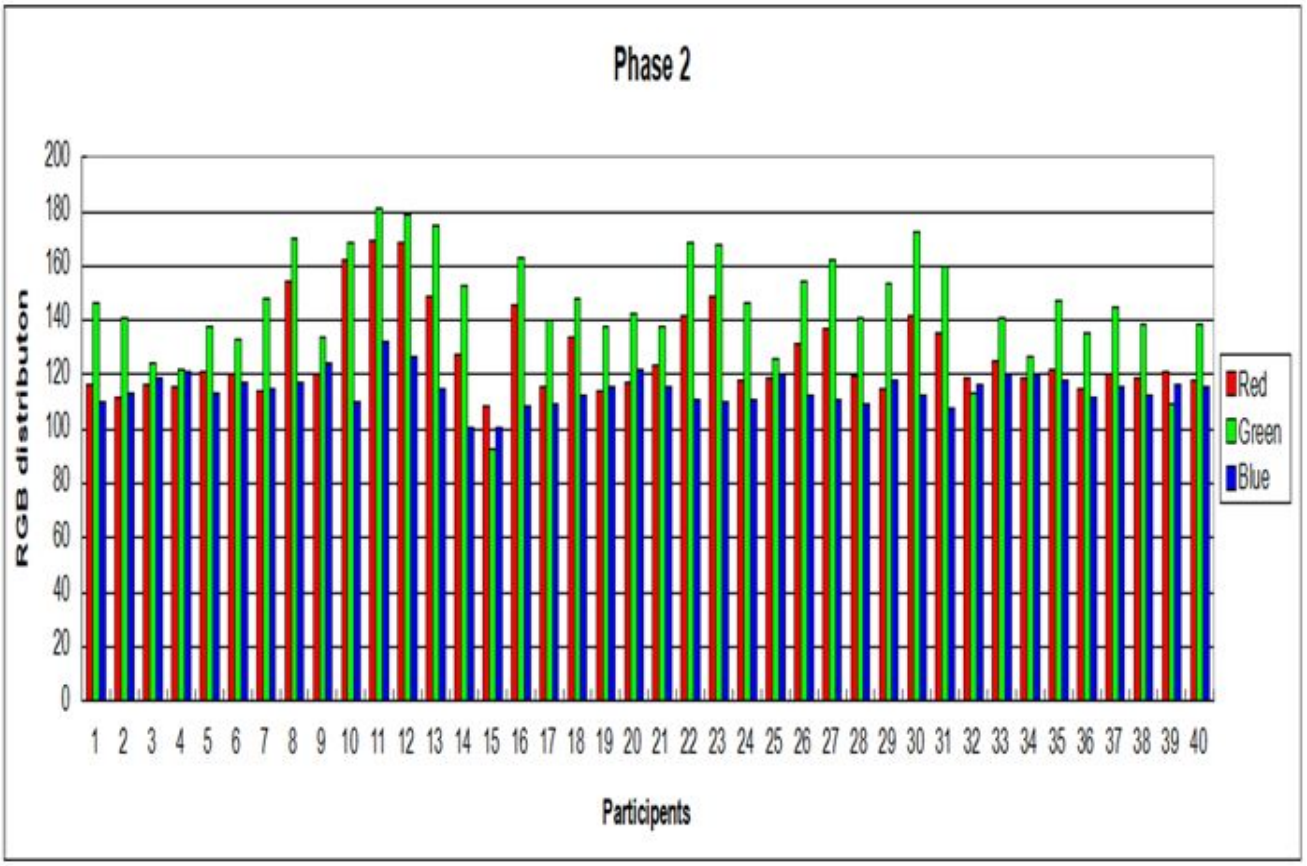
1. Baseline recording: The baseline recording will take 120 seconds to complete its procedure.
2. Valsalva test: The subjects have to take a deep breath close both the nostrils with their right hand and hold it for 15 seconds and slowly exhale for 5 seconds and place their right-hand palm upside down for the next 40 seconds.
3. Deep breathing test: The subject has to slowly inhale for 5 seconds and exhale for 5 seconds this cycle has to be done 6 times for 60 seconds.
4. Orthostatic test: The subjects have to step down from tetrapolar plates for the legs and stand on the floor, keeping their hands on the plates for 60 seconds.

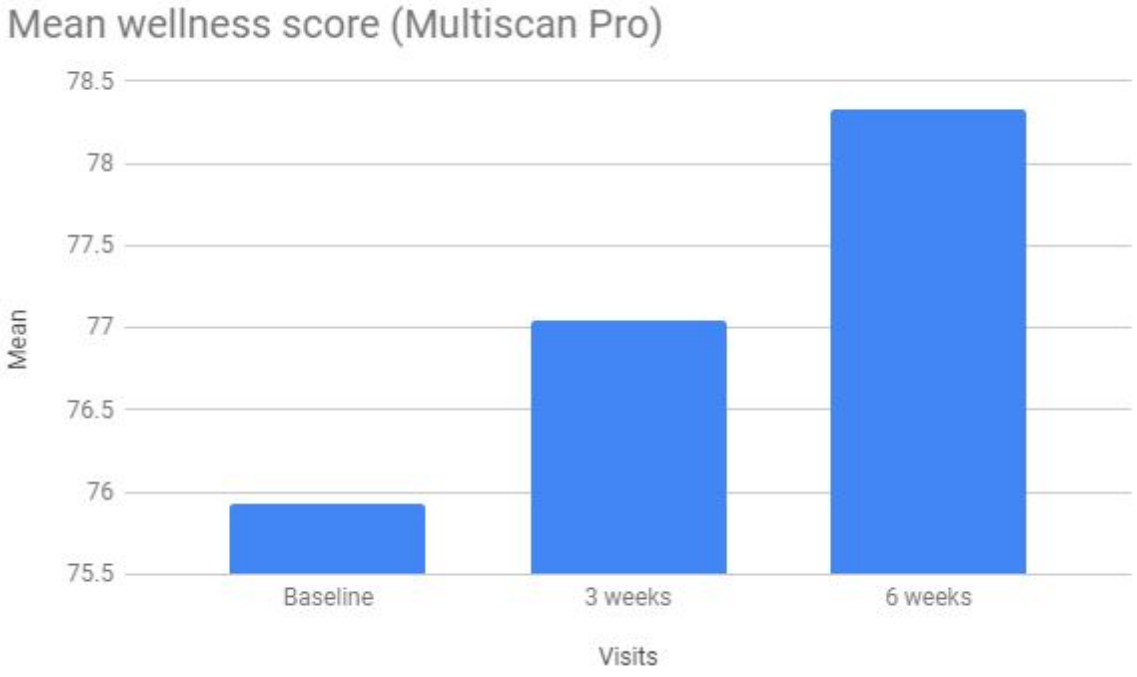
Observations and results

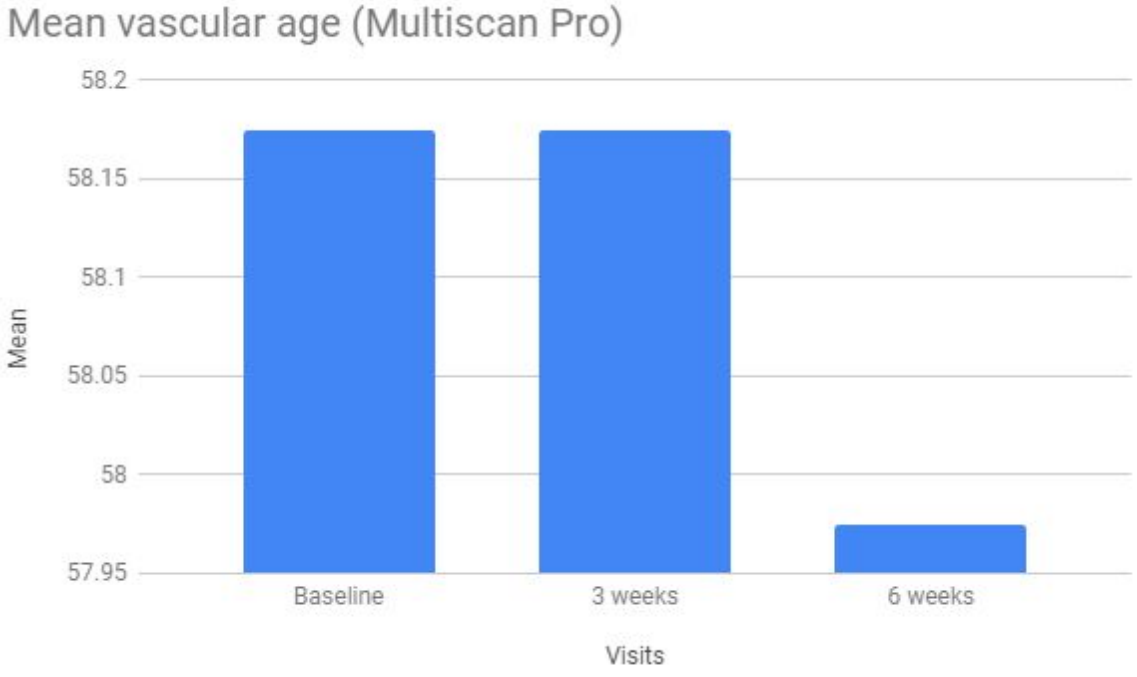
Biofield Viewer (BV)

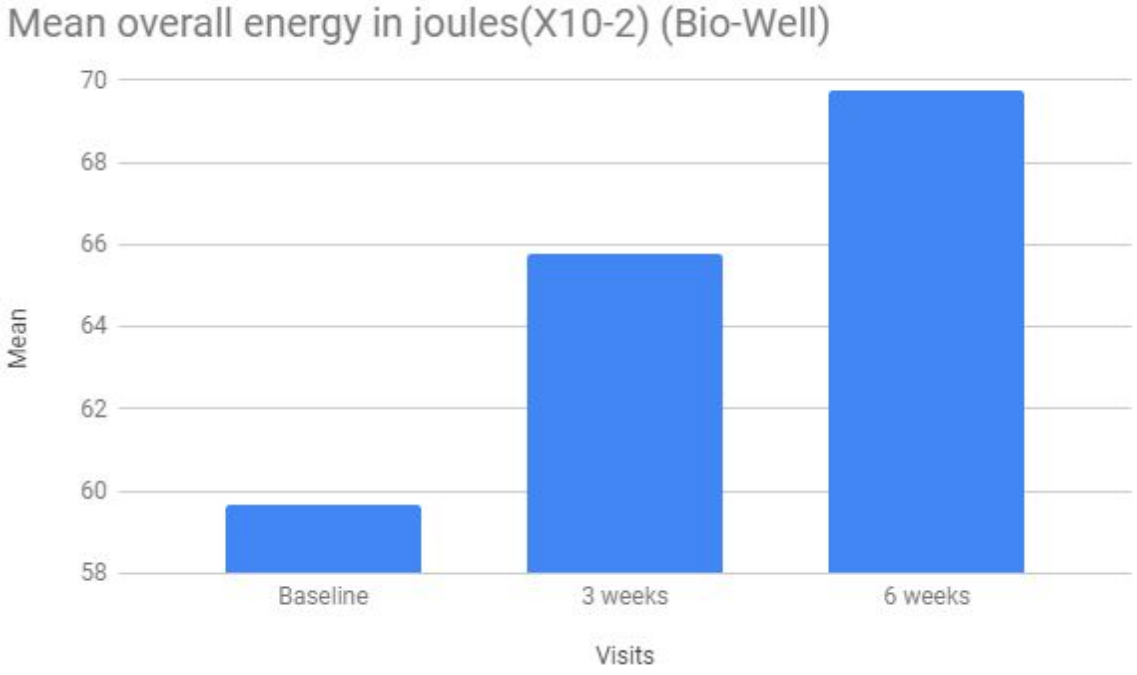


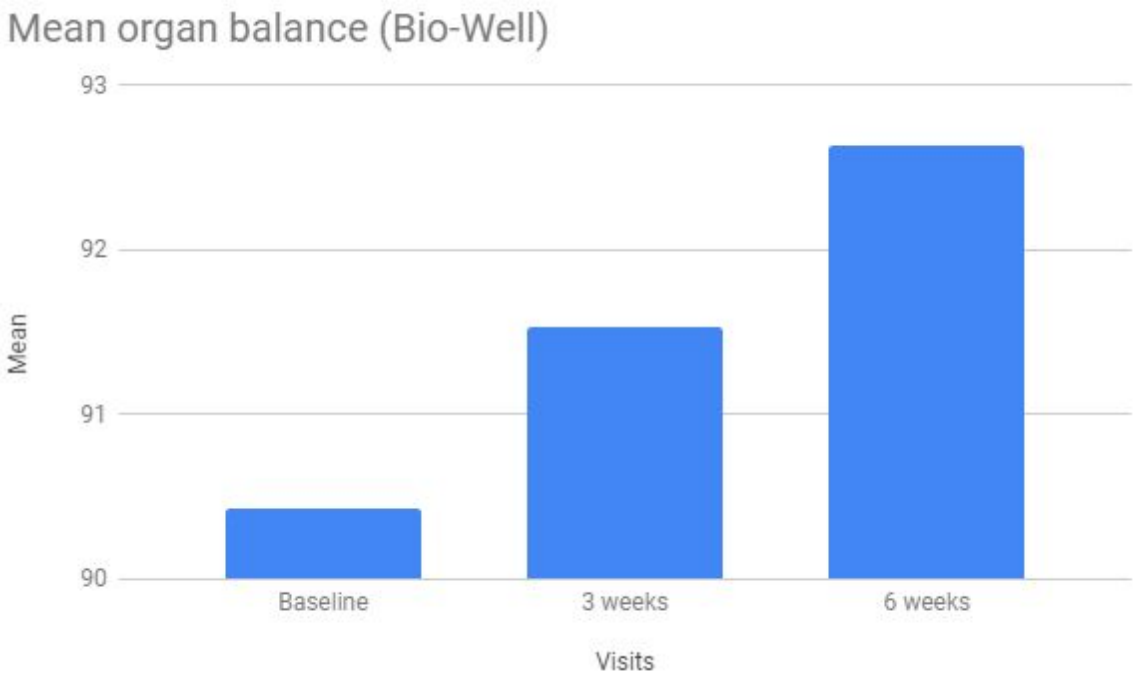

Phase 1
RGB distribution
200
180
160
140
120
100
80
60
40
20
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
Participents
Red
Green
Blue

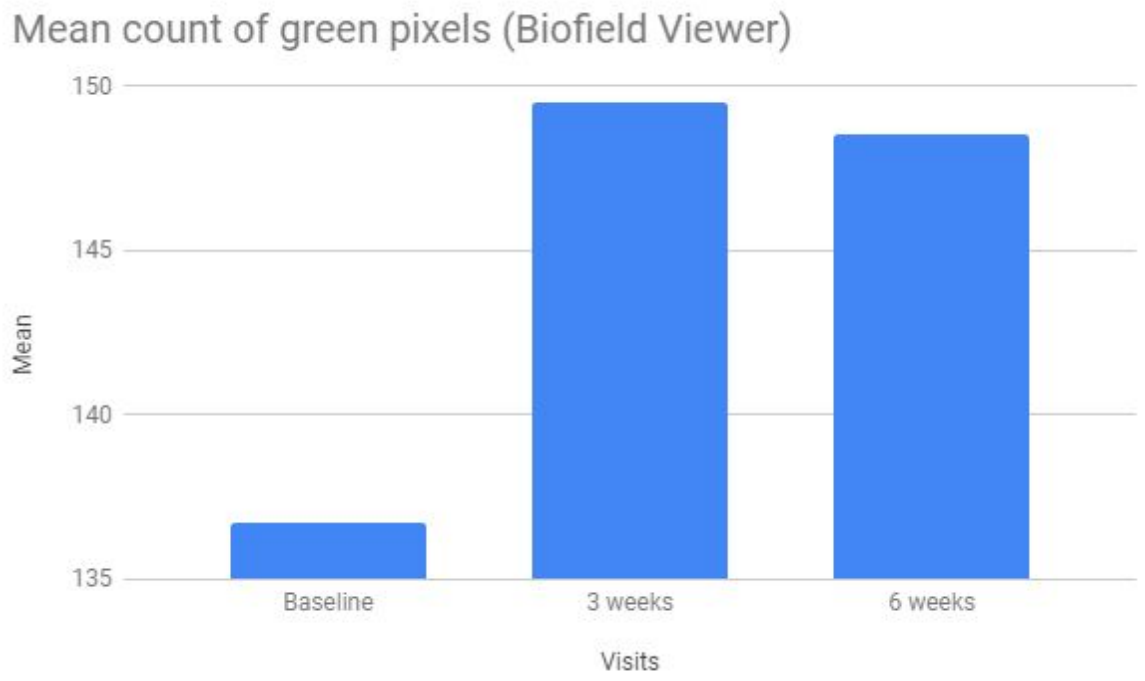

Phase 2
RGB distributon
200
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Participents
Red
Green
Blue


Mean wellness score (Multiscan Pro)
78.5
78
77.5
77
76.5
76
75.5
Mean
Baseline
3 weeks
6 weeks
Visits


Mean vascular age (Multiscan Pro)
58.2
58.15
58.1
58.05
58
57.95
Mean
Baseline
3 weeks
6 weeks
Visits


Mean overall energy in joules(X10-2) (Bio-Well)
70
68
66
64
62
60
58
Mean
Baseline
3 weeks
6 weeks
Visits


Mean organ balance (Bio-Well)
93
92
91
90
Mean
Baseline
3 weeks
6 weeks
Visits



Multiscan Pro and Bio-Well

Experimental group

(MSP- Multiscan Pro, EPI\GDV- Bio-Well, BV- Biofield Viewer)

Parameters	Visits	Mean	Std. deviation	Significance/p value
MSP_Phase angle	Baseline	7.9875	1.1055	Not significant (p=0.7373)
	3 weeks	8.0725	1.0162	
	6 weeks	7.9000	1.2167	
MSP_Vascular age	Baseline	58.175	9.3036	Not Significant (p=0.9256)
	3 weeks	58.175	9.3036	
	6 weeks	57.975	9.7730	
MSP_Wellness score	Baseline	75.925	6.7382	Not significant (p=0.0924)
	3 weeks	77.050	6.9352	
	6 weeks	78.325	5.8282	

EPI\GDV _Energy	Baseline	59.665	5.5367	Highly significant*** (p <0.0001)
	3 weeks	65.760	7.3880	
	6 weeks	69.760	5.2598	
EPI\GDV _L/R symmetry	Baseline	95.063	3.6794	Not Significant (p=0.0570)
	3 weeks	96.505	3.0733	
	6 weeks	96.538	3.1277	
EPI\GDV _Organ balance	Baseline	90.430	3.7782	Significant* (p=0.0030)
	3 weeks	91.532	2.7297	
	6 weeks	92.641	2.5622	
BV_Red	Baseline	124.945	11.496	Not significant (p=0.2333)
	3 weeks	134.612	19.018	
	6 weeks	127.69	16.018	
BV_Green	Baseline	136.752	20.995	Significant* (p=0.0111)
	3 weeks	149.484	18.883	
	6 weeks	148.520	19.408	
BV_Blue	Baseline	115.884	3.652	Not significant (p=0.3032)
	3 weeks	116.051	6.811	
	6 weeks	114.717	6.113	

Table.1 Results of subjects in experimental group

*p<0.05 significant; **p<0.001 very significant; ***p<0.0001 Highly significant; p>0.05 not significant.

Control group

Parameters	Visits	Mean	Std. deviation	Significance
MSP_Phase angle	Baseline	8.220	0.6760	Not significant (p=0.5899)
	3 weeks	8.500	0.5873	
	6 weeks	8.460	0.5727	
MSP_Vascular age	Baseline	56.20	11.2561	Not significant (p=0.6818)
	3 weeks	59.60	8.2945	
	6 weeks	59.00	9.4868	
MSP_Wellness score	Baseline	73.00	5.3851	Not significant (p=0.6042)
	3 weeks	70.00	8.0932	
	6 weeks	71.00	6.3007	
EPI\GDV _Energy	Baseline	52.726	9.2001	Not Significant (p=0.3775)
	3 weeks	57.768	4.0658	
	6 weeks	57.230	5.6192	
EPI\GDV _L/R symmetry	Baseline	94.692	3.3217	Not significant (p=0.5897)
	3 weeks	97.406	3.4778	
	6 weeks	95.764	2.6796	
EPI\GDV _Organ balance	Baseline	86.246	4.1204	Not significant (p=0.4124)
	3 weeks	90.502	3.1420	
	6 weeks	88.764	5.0422	
BV_Red	Baseline	138.06	17.534	Not significant (p=0.3542)
	3 weeks	161.295	13.359	
	6 weeks	127.154	14.688	

BV_Green	Baseline	164.339	9.839	Not significant (p=0.0661)
	3 weeks	161.577	8.846	
	6 weeks	147.925	14.174	
BV_Blue	Baseline	116.297	7.809	Not significant (p=0.5968)
	3 weeks	124.831	10.191	
	6 weeks	114.283	2.423	

Table.2 Results of the subjects in control group

$p>0.05$ Not significant.

Discussion

The pilot study demonstrates a statistically significant improvement in the subjects biofield from using the LifeWave, Inc. X-39 patches in Bio-Well (EPI\GDV) and Biofield Viewer (BV). The statistical analysis revealed a highly significant improvement ($p<0.0001$) in overall energy of the person and significant improvement($p<0.05$) in the symmetrical distribution of energy over different organs in bio-well (EPI\GDV). A significant improvement ($p<0.05$) of green pixels in BV pixel analysis supports the effectiveness of the X-39 patches in terms of improving the vitality of the biofield. Table. 1 displays summary post-test statistics for the changes in the experimental group and reports the significance level. Table. 2 displays summary post-test statistics of the subjects in the control group have not got a statistical significance.

From this research, we can conclude that LifeWave, Inc. X-39 patch is effective in elevating the overall energetic vitality of the biofield and the body and also boosting the self-healing mechanisms. This study reveals the potential of X-39 patches to provide sustainable non-drug therapy. Several anecdotal responses were heard from the subjects that the patches helped them to have an active day and sound sleep in the night. Smart interventions are increasing in popularity, due to drug toxicity and

side effects. Patches can provide a sustainable complement to conventional therapies. This study was conducted without a placebo patch. To advance this science, future studies must be undertaken with a larger random sample using double-blinded placebo controlled trials.

Conclusion

The pilot study demonstrates a statistically significant improvement in the experimental group when compared to the control group. It can be concluded that X-39 patches are effective in bringing positive changes in the biofield and improving the overall wellness of a person.

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