

Supplementary Information

Integrating Low-Frequency Electrical Stimulation with Complementary and Integrative Health therapy

Akiko Suganami^{1,2}, Masayuki Goto^{3,4}, and Yutaka Tamura^{1,2,*}

¹ Department of Bioinformatics, Graduate School of Medicine, Chiba University, Chiba 260-8670, Japan

² Molecular Chirality Research Center, Chiba University, Chiba 263-8522, Japan

³ Seirei Memorial Hospital, Ibaragi 319-1235, Japan

⁴ Space Medical Accelerator, Ibaragi 305-0031, Japan

CONTACT INFORMATION

* Yutaka Tamura: +81-43-226-2544, yutaka_tamura@faculty.chiba-u.jp

A



B



Supplementary Figure 1. Instruments for LFES-CIH Therapy

A. LIMONIS (TAKARA BELMONT Co., Osaka, Japan): The treatment chair provides relaxing patient support.

B. AC5100 (ASIAS Co., Hamamatsu, Japan): The medical-grade Arbitrary Waveform Generator (Japanese Medical Device Approval Number: 230ADBZX00035000) can be purchased for approximately 50,000 dollars.

ID _____

Date / / _____

Time Pre : _____

Post : _____

How much pain or lethargy do you currently feel in each part of your body?
Please mark the appropriate number.

0. Nothing 1. Slight 2. Moderate 3. Severe

Neck 0 1 2 3

Left Shoulder 0 1 2 3

Left Upper Arm 0 1 2 3

Left Elbow/Forearm 0 1 2 3

Lower Back 0 1 2 3

Left Hand/Wrist 0 1 2 3

Left Buttock/Thigh 0 1 2 3

Left Knee/Lower Leg 0 1 2 3

Left Foot/Ankle 0 1 2 3

Right Shoulder 0 1 2 3

Right Upper Arm 0 1 2 3

Right Elbow/Forearm 0 1 2 3

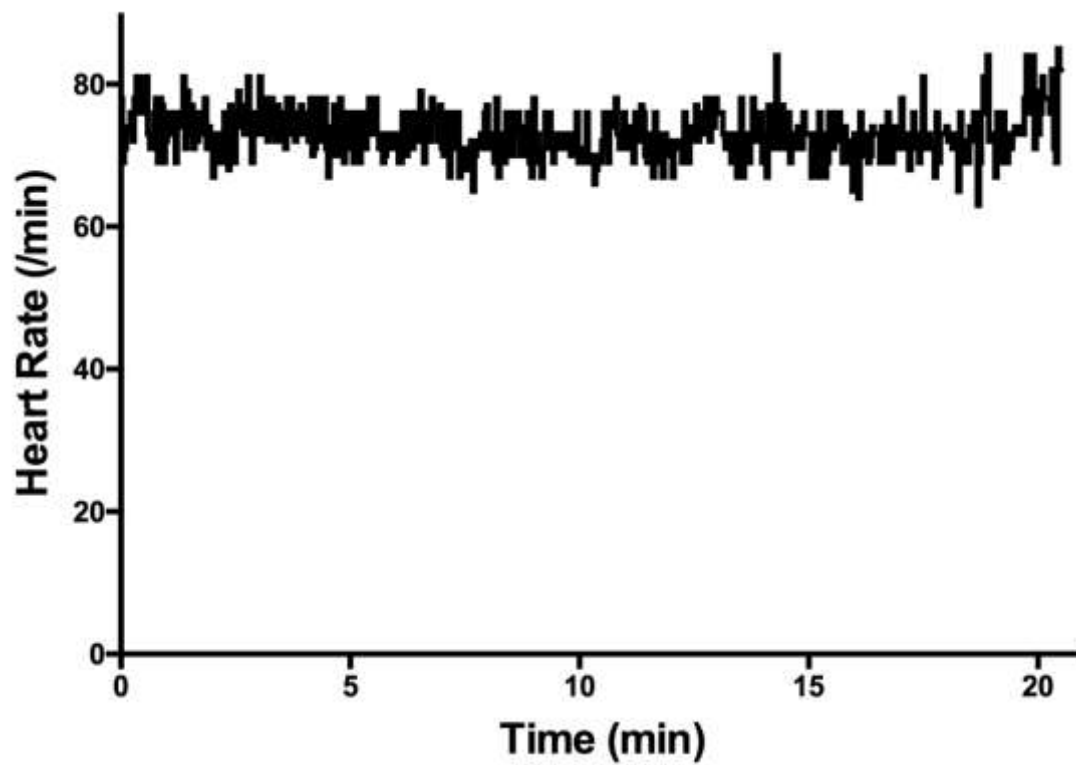
Right Hand/Wrist 0 1 2 3

Right Buttock/Thigh 0 1 2 3

Right Knee/Lower Leg 0 1 2 3

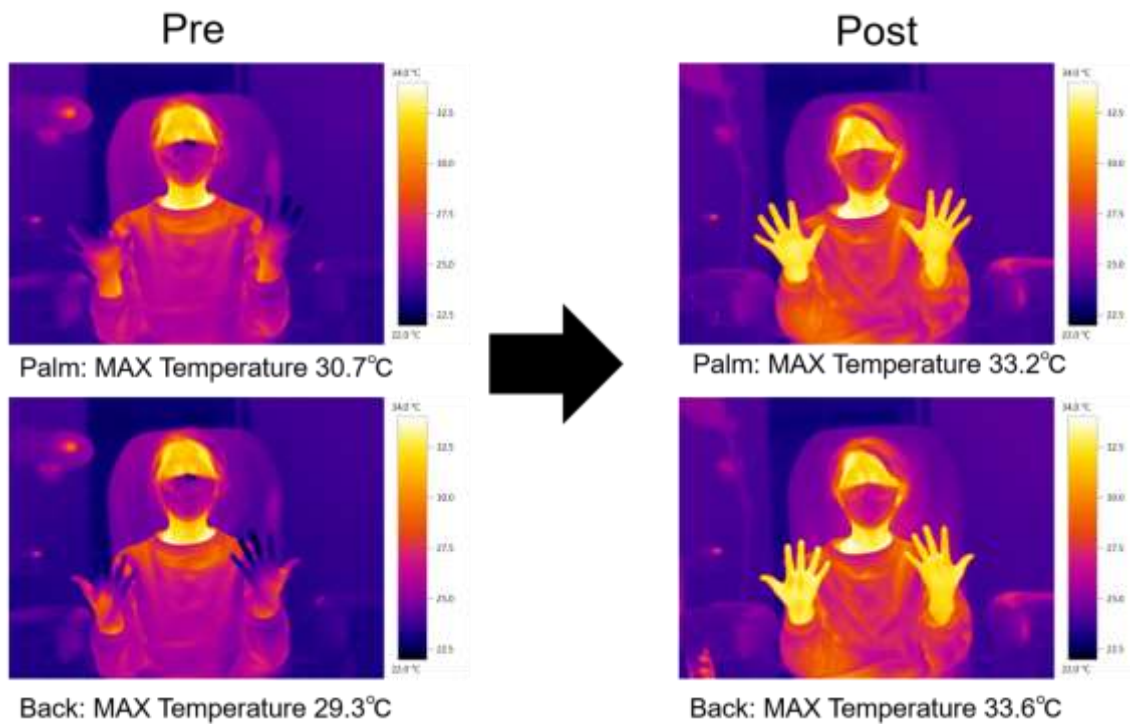
Right Foot/Ankle 0 1 2 3

Supplementary Figure 2. Pain Questionnaire



Supplementary Figure 3. Typical Sensor Gram of the Blood-flow Measurement

The graph displays heart rate (/min) during LFES-CIH therapy.



Supplementary Figure 4. Body Surface Temperature

Thermographic measurements were taken pre- and post-LFES-CIH therapy for the palm (upper) and back (down) regions using a testo 885 device (Testo SE & Co. KGaA, Titisee-Neustadt, Germany).

A



B



Supplementary Figure 5. Measurement Instruments for LFES-CIH Therapy

A. Body Checker NEO (Japanese Medical Device Approval Number: 13B1X10074000014, Tokyo Iken Co., LTD, Tokyo, Japan): Heart rate variability measurement device.

B. WB-100 (Japanese Medical Device Approval Number: 224AGBZX00023000, JAPAN PRECISION INSTRUMENTS, Inc., Shibukawa, Japan): Sphygmomanometer/pulse meter/pulse oximeter.

A



B



Supplementary Figure 6. Compact Devices for Personal LFES-CIH Therapy

A. AC6000 (ASIAS Co., Hamamatsu, Japan): A medical-grade Arbitrary Waveform Generator (Japanese Medical Device Approval Number: 303AGBZX00016000) can be purchased for approximately 10,000 dollars.

B. HV-F021 (OMRON HEALTHCARE Co., Ltd., Kyoto, Japan): An electrical muscle stimulation body massager (Japanese Medical Device Approval Number: 225AABZX00193000), available at an approximate price of 50 dollars.