



# User Manual

CS-IFU-EN  
Revision A (DRAFT)  
2017-07-27

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## Safety Information

### Contraindications

- The system should not be used by anyone with a cardiac pacemaker, implanted defibrillator, or other implanted metallic or electronic device. Such use could cause electric shock, burns, electrical interference, or death.
- The system should not be used by anyone with a pre-existing medical condition that may be impacted by muscle stimulation, including fractures, dislocations, heart problems, or severe osteoporosis. Such use can complicate the condition or lead to severe injury.

### Warnings

- The system and Mobile Application are not intended to be used in conjunction with therapy or treatment diseases of medical or medical conditions of any kind.
- The long term effects of electronic stimulation are unknown. Discontinue use and consult a medical professional if any adverse effects are experienced.
- Never attempt to use the device to stimulate head or neck.
- Do not use the device on, or close to injured, swollen, infected, or inflamed areas of the skin. Doing so may complicate the existing condition or prolong healing.
- Long term use can cause skin irritation. Discontinue use if you experience skin pain or a rash on your arm that doesn't fade within 1 hour.
- Do not immerse electrical components in water. Doing so may result in electrical shock and damage to the device.
- Never attempt to disassemble, modify or repair any components of the system. Doing so may result in electrical shock and damage to the device.








- Do not use if any component is visibly damaged. Connectors and enclosures should be inspected for defects, breaks and obstructions before every use.
- Do not use the device while sleeping.
- The system is to be used only with Stim and Electrode components supplied by Rehabtronics Inc.
- Do not use electrodes without hydrogel



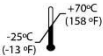

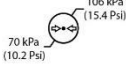
## Precautions

- Safety of powered muscle stimulators for use during pregnancy has not been established.
- Caution should be used over areas of the skin which lack normal sensation.
- Some users may experience skin irritation or hypersensitivity due to electrical stimulation. The irritation can usually be reduced by using an alternate electrode placement or by changing the stimulation parameters. If problems persist, discontinue use.
- Muscle soreness may occur, much like during regular exercise. Limit the amount of usage per day according to exercise-related soreness.
- Replace Electrodes if they show signs of advanced wear and tear within suggested replacement period.
- Ensure the skin is clean and free of any ointments, lotions and cosmetics. The presence of other substances can have unknown effects on stimulation delivery.
- Do not store or operate the device in conditions outside those listed. Doing so can damage components.
- Caution when engaging in new or potentially dangerous activities.

## List of Symbols

The following table lists the symbols that are used on the StimRay labels and in this manual:

Symbol	Definition	Application to the StimRay System
	Warning	Important information or instructions that should be observed to avoid potential injury or damage to the device.
	Operating Instructions	Instructions for use can be referenced detailing operating instructions.
	Follow Instructions for Use	The instructions for use contain critical instructions necessary to use the device safely.
<b>IP22</b>	Ingress Protection Rating	The <b>STIM</b> enclosure is protected against dripping water (e.g. light rain) and ingress of finger-sized objects.
	Non-Ionizing Radiation Emitter	The <b>STIM</b> component uses low-energy radio frequencies.
	Model Reference (Catalogue/Re-order Number)	Reference the accompanying model number next to this symbol when re-ordering components.
	Lot/Batch Number	Reference the accompanying batch number next to this symbol if contacting support.
	Type BF Applied Part	Components that make patient contact have a degree of protection against electric shock.

	European Authorized Representative	The contact information accompanying this symbol can be used to contact a representative in the European Community.
	Waste Electrical and Electronic Equipment (WEEE)	Do not dispose electronics with regular household waste. Consult local waste management authorities to determine the acceptable means to dispose of electronic equipment.
	Transportation and storage temperature limits	Do not transport or store the StimRay outside the temperature range indicated.
	Transportation and storage humidity limits	Do not transport or store the StimRay outside the humidity range indicated.
	Transportation and storage pressure limits	Do not transport or store the StimRay outside the pressure range indicated.

## Introduction

### Device Description

The StimRay system, used with StimRay Mobile Application, is intended for the stimulation of healthy muscles in order to improve or facilitate muscle performance.

It is intended to supplement strengthening, massage and recovery of the following muscle groups, during or after exercise:

- Abs
- Adductors
- Biceps
- Calves
- Deltoids
- Forearms
- Glutes
- Hamstrings
- Lats
- Lower-Back
- Pecs
- Quads
- Traps
- Triceps

The StimRay device and StimRay Mobile Application are not intended to be used in conjunction with therapy or treatment diseases of medical or medical conditions of any kind.

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## System Requirements

The StimRay system requires the following:

<b>StimRay Components (Included in system kit)</b>	<b>Other Requirements (non-included)</b>
<ul style="list-style-type: none"><li>- StimRay STIM (up to 2 can be used simultaneously)</li><li>- StimRay CHARGER</li><li>- StimRay ELECTRODE (up to 2 can be used simultaneously)</li><li>- StimRay ELECTRODE Hydrogel Pads</li><li>- USB-to-microUSB cable</li></ul>	<ul style="list-style-type: none"><li>- Mobile device running iOS 10, or later</li><li>- USB power supply (output: 5V, 1A-2A)</li></ul>

## System Components

### STIM Component

The StimRay STIM is a small, rechargeable battery-powered, stimulation device that produces stimulation pulses when connected to a StimRay ELECTRODE component, and can be controlled using a mobile device.

### CHARGER Component

The StimRay CHARGER component is used to charge the STIM battery. It is USB-powered, and can connect to any compliant USB power-source with a micro-USB cable. It allows for up to two (2) STIM units to be charged simultaneously.

### ELECTRODE Component

The StimRay ELECTRODE is a 2-channel electrode that is placed over exercised muscles groups.

It consists of a magnetic connection for a StimRay STIM, and replaceable hydrogel pads.

### MOBILE APP Component

The StimRay MOBILE APP component is a software program that is used to control the STIM component. It allows for selection and initiation of exercise programs, and stimulation intensity adjustment.

It is compatible with Apple iOS devices, and can be freely downloaded from the Apple App Store.

### Before You Begin

#### Downloading and Installing the **MOBILE APP**

Download the “StimRay” app from the Apple App Store onto your mobile device.

### Using the STIM

Using the **STIM** is as simple as connecting it to an **ELECTRODE**, and then controlling it with the **MOBILE APP** (see “Using the MOBILE APP”).

The **STIM** will automatically turn on when connected to an **ELECTRODE** or **CHARGER**, and automatically turn off when not connected to anything.

The **STIM** battery requires periodic recharging using the **CHARGER** (see “Using the CHARGER”).

## STIM Indicators

The **STIM** contains a single LED to indicate its status, when connected to either the **CHARGER** or an **ELECTRODE**. The following table describes the meaning of the LED states:

Stim LED	Meaning
<b>No Activity</b> <i>(Off)</i>	<p>The <b>STIM</b> is powered off. All stimulation functions and <b>MOBILE APP</b> connections are disabled.</p> <p>The <b>STIM</b> will automatically turn off when it is not connected to either an <b>ELECTRODE</b> or <b>CHARGER</b>.</p>
<b>Blinking Blue</b> <i>(Standby)</i>	<p>When connected to a <b>CHARGER</b>, this means that:</p> <ul style="list-style-type: none"><li>• The <b>STIM</b> charging</li><li>• The <b>STIM</b> is waiting for <b>MOBILE APP</b> pairing</li></ul>
<b>Solid Blue</b> <i>(Ready)</i>	<p>When connected to a <b>CHARGER</b>, this means the the <b>STIM</b> battery is fully charged.</p> <p>When connected to an <b>ELECTRODE</b>, this means that the <b>STIM</b> is on, and ready to start stimulating.</p>
<b>Orange</b> <i>(Active - Stimulating)</i>	<p>The <b>STIM</b> is sending stimulation pulses to the <b>ELECTRODE</b>.</p> <p>This is only possible when the <b>STIM</b> is connected to the <b>ELECTRODE</b>, and controlled with the <b>MOBILE APP</b>.</p>
<b>Flashing Red</b> <i>(Low Battery)</i>	<p>The <b>STIM</b> battery has less than 10% capacity remaining.</p>

<b>Solid Red</b> (Error)	An error has been detected. Any stimulation will be stopped, and functions will be disabled. See “Troubleshooting” section of this manual for details.
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## Using the CHARGER

The StimRay CHARGER serves two functions. It is used to:

1. Recharge STIM batteries
2. Pair STIM units with a MOBILE APP (see “Using the MOBILE APP”)

## Charging the STIM

Connect the **CHARGER** to a compliant USB power source, and then connect up to two (2) **STIM** units. Charging progress is monitored by observing the LED on connected **STIM** units according to the following table:

	Charging in Progress	Charging Complete	Charging Error
STIM LED Status	Pulsing blue LED	Solid blue LED	Solid red LED

**NOTE:** Two **STIM** units can be charged separately or simultaneously. Batteries should be charged regularly. When **STIM** units are not in use, it is recommended that they be charged to avoid battery depletion.

## Using the ELECTRODES

### Replacing Hydrogel Pads

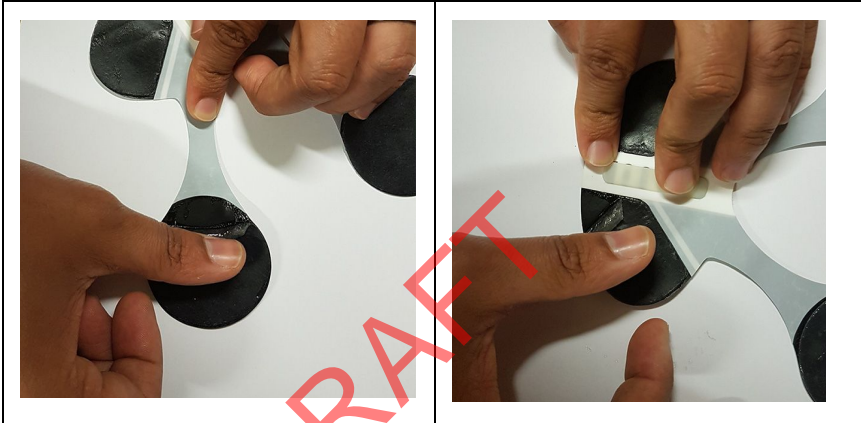
The StimRay **ELECTRODES** require replaceable hydrogel pads in order to stick to the skin and stimulate as intended.

Hydrogel pads are intended to be changed after five (5) days of use, or whenever the pads no longer effectively stick to the skin.

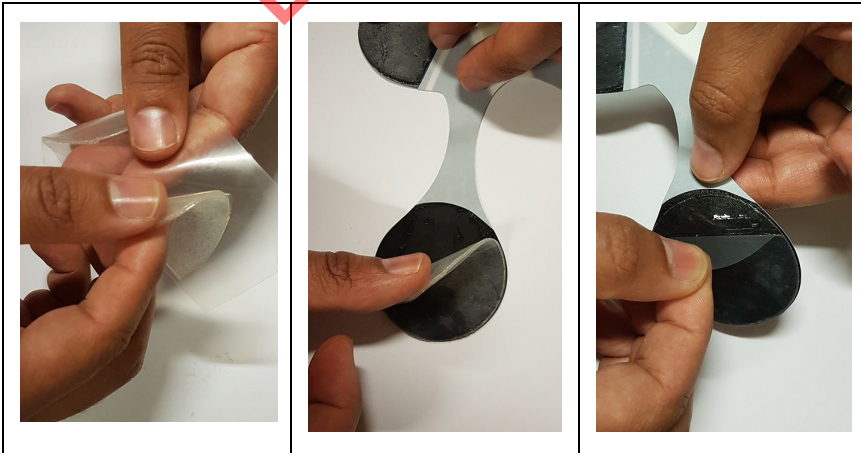
Replacement pads are available from Rehabtronics (see “Contact and Re-ordering Information” section of this manual).

**ELECTRODE** hydrogel pads can be replaced as follows:

1. Peel off and discard previous hydrogel pads from the **ELECTRODE**.



2. Apply new hydrogel pads to the **ELECTRODE** pad areas.



## Preparing the Skin

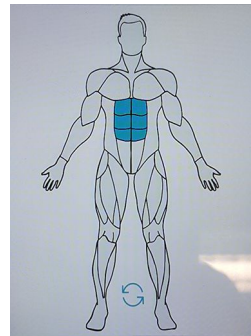
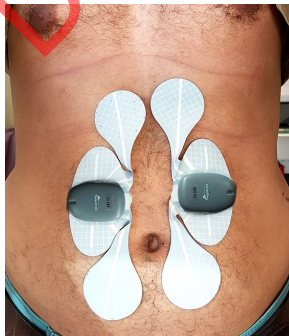
The skin over which the **ELECTRODE(S)** are placed must be clean, healthy, and free of obstructions. Perform the following preparation steps prior to fitting:

1. Ensure the skin is healthy and free of any cuts, irritations, infections, or other injuries.
2. Ensure the skin is clean and free of any lotions, ointments or other cosmetics.
3. Remove any personal items such as jewelry, watches, bracelets, etc. that may obstruct **ELECTRODE** placement.
4. It may be necessary to trim any excess arm hair from the areas over which the **ELECTRODE(S)** will be placed in order to ensure good contact with the skin.

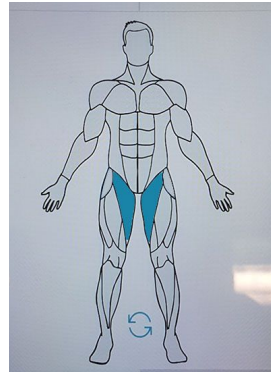
## Applying ELECTRODES to the Body

ELECTRODES are applied to the body by using the sticky hydrogel pads, such that the circular pads are placed over the desired muscle group.

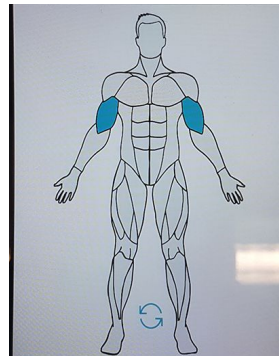
- Abs



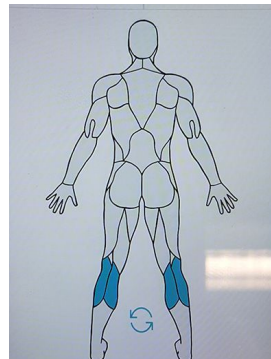
- Adductors



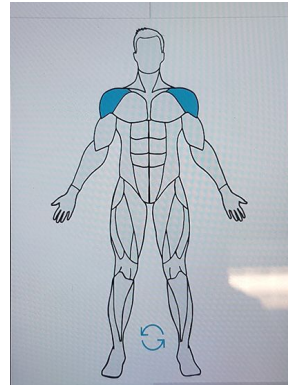
- Biceps



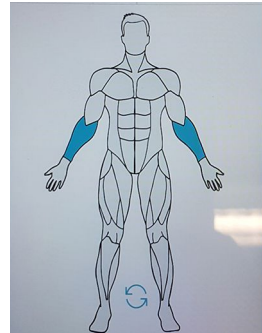
- Calves



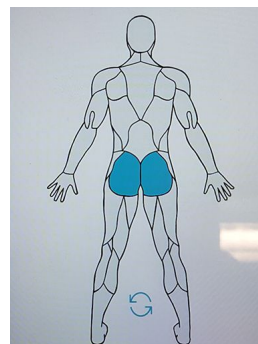
- Deltoids



- Forearms

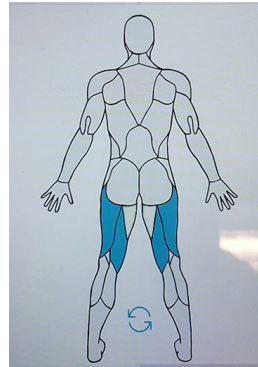


- Glutes

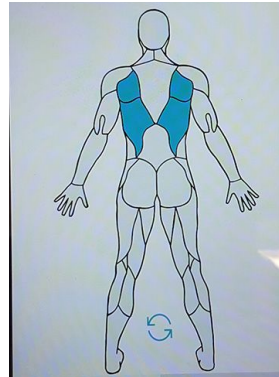




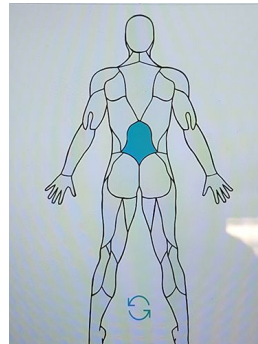
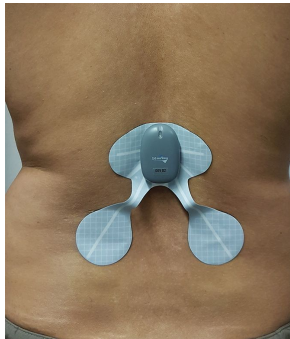
- Hamstrings



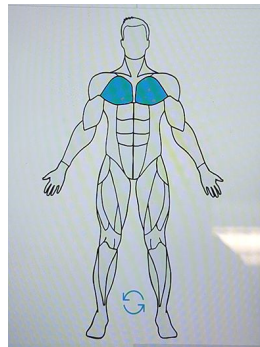
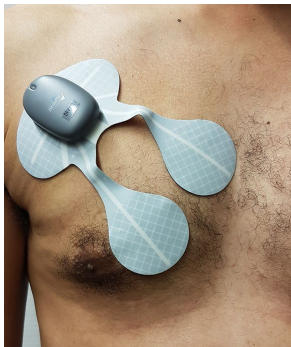
- Lats



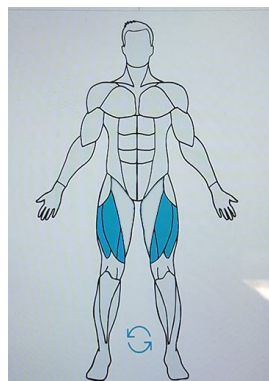
- Lower-Back



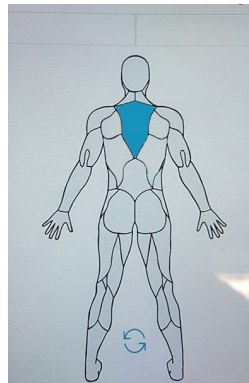
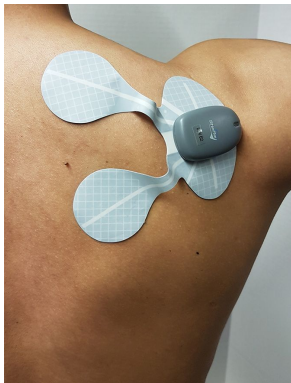
- Pecs



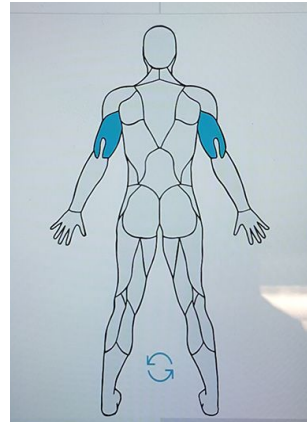
- Quads



- Traps



- Triceps



The MOBILE APP contains further instructions and images as to how to apply ELECTRODES to specific areas.

## Using the MOBILE APP

The MOBILE APP is what controls paired STIM units. This section describes the features and functions of the MOBILE APP, in particular:

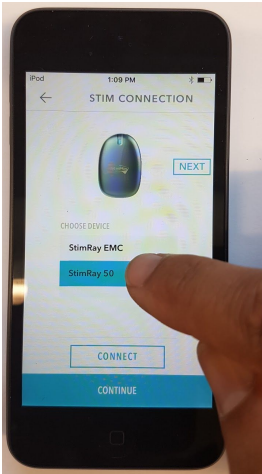
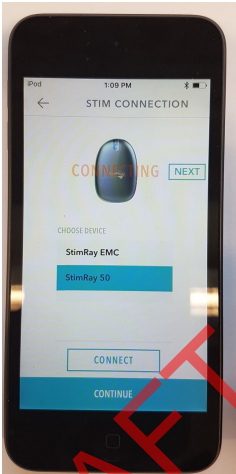
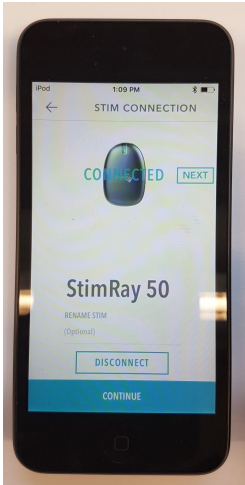
- Pairing STIM units with the MOBILE APP
- Naming STIM units
- Selecting Muscle Groups
- Selecting Exercise Programs
- Running Exercise Programs and Configuring Intensities

## Pairing STIM Units with the MOBILE APP

**STIM** units need to first be paired with your mobile device running the **MOBILE APP**. Up to two (2) **STIM** units can be paired with a given mobile device.

Pairing requires connection to the **CHARGER**, as follows:

1. Open the StimRay **MOBILE APP** on your mobile device
2. Connect the **STIM** to the **CHARGER** - The **STIM**'s LED will flash blue
3. Pairing Instructions

		
<p>Select one of the default names of the <b>STIM</b> that will appear on the list of the <b>STIM</b> available to pair and then Click “CONNECT”</p>	<p>A red text “CONNECTING” will appear</p>	<p>Then Blue text “CONNECTED”. The default Name of the <b>STIM</b> will appear at the bottom of the screen</p>

4. To pair the second **STIM**, Click “ NEXT” and go through Step 3 again.

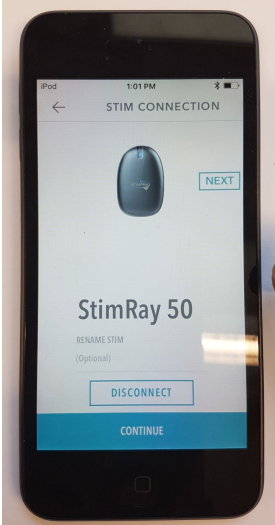
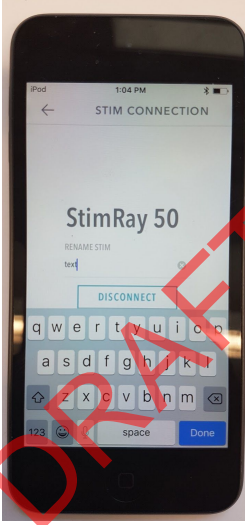
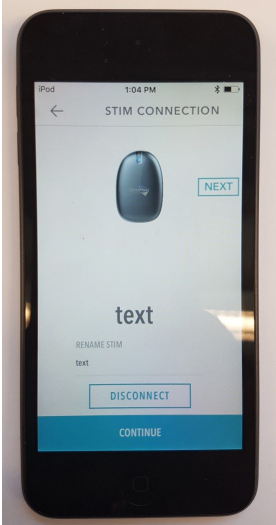
**NOTE:** Pairing must be done within three (3) minutes of connecting the **STIM** to the **CHARGER**. If pairing is unsuccessful, disconnect the **STIM** from the **CHARGER**, then re-connect and try again.

**NOTE:** The **MOBILE APP** will remember paired **STIM** units, so the pairing process only has to be done once for any given **STIM** unit and mobile device.

## Naming STIM Units

The MOBILE APP allows paired STIM units to be assigned a name, so they can be recognized easily in the future.

Naming / Renaming Instructions:

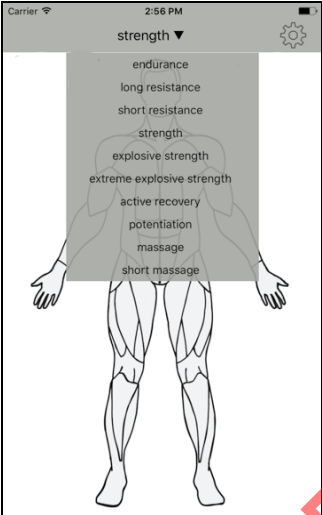
		
Click Bellow the text “RENAME STIM”	Keyboard will appear, name your <b>STIM</b> , then click “ Done”	The new name of your <b>STIM</b> will Appear

## Selecting Muscle Groups

The MOBILE APP must be told what on parts of the body paired STIM units will be acting. This is done on the muscle-group selection screen.  
(see above “Applying ELECTRODES to the Body”)

Selecting Exercise Programs

Depending on the muscle group selected, up to six (6) exercise modes will be available within the MOBILE APP. The following table describes the different modes:

A screenshot of a mobile application interface. At the top, it shows 'Carrier' with a signal icon, the time '2:56 PM', and a battery icon. Below this is a header 'strength' with a downward arrow and a settings gear icon. A list of exercise modes is displayed over a faint outline of a human figure: 'endurance', 'long resistance', 'short resistance', 'strength', 'explosive strength', 'extreme explosive strength', 'active recovery', 'potentiation', 'massage', and 'short massage'. A large red 'DRAFT' watermark is oriented diagonally across the center of the image.

Choose the desired mode from the mode selection screen on the MOBILE APP.

Exercise Mode	Description
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Endurance	<p>Improves muscle endurance and resistance to a fatigue. Assists in developing a higher absolute intensity over a given volume at greater ease, improving muscle's ability to increase the rate of lactic acid removal.</p> <p>Use up to 5 times a week per muscle group, before your endurance workouts.</p> <p><b>DURATION: 40-46 MINUTES</b></p> <p><b>RECOMMENDED MUSCLE GROUPS:ADDUCTORS, DELTOIDS, GLUTES, LOWER BACK, TRAPS, WRIST FLEXORS/EXTENSORS</b></p>
Long Resistance	<p>Improves muscle ability to resist intense and prolonged effort, muscle tone and definition. Assists in ability to sustain higher intensities of exercise for short time frames.</p> <p>Use up to 4 times a week per muscle group, before or after your Long Resistance workouts.</p> <p><b>DURATION: 26-32 MINUTES</b></p> <p><b>RECOMMENDED MUSCLE GROUPS:ABS, ADDUCTORS, CALVES, DELTOIDS, GLUTES, LATS, LOWER BACK, TRAPS, WRIST FLEXORS/EXTENSORS</b></p>
Short Resistance	<p>Improves muscle ability to resist intense and prolonged effort, increases muscle hypertrophy (muscle cross-sectional area). Assists in creating strength gains toward movement, speed, and ground reaction force on the field or court.</p>

	<p>Use up to 3 times a week per muscle group, in between or after your usual workouts.</p> <p><b>DURATION: 20-26 MINS</b></p> <p><b>RECOMMENDED MUSCLE GROUPS: ABS, BICEPS, CALVES, HAMSTRINGS, LATS, PECS, QUADS, TRICEPS</b></p>
Strengt	<p>Improves muscle strength. Great in complementing strength training sessions with the major focus on pushing, pressing and pulling training.</p> <p>Use up to 3 times a week per muscle group, in between or after your strength training workouts.</p> <p><b>DURATION: 20-26 MINS</b></p> <p><b>RECOMMENDED MUSCLE GROUPS: BICEPS, HAMSTRINGS, PECS, QUADS, TRICEPS</b></p>
Explosive Strength	<p>Focuses on rapid muscle strength development. Great for overcoming plateaus in your strength or speed training, complements well your plyometric workouts.</p> <p>Use up to 3 times a week per muscle group, in between or after your strength training workouts.</p> <p><b>DURATION: 17-23 MINS</b></p> <p><b>RECOMMENDED MUSCLE GROUPS: BICEPS, HAMSTRINGS, PECS, QUADS, TRICEPS</b></p>
Extreme Explosive	<p>Focuses on rapid muscle strength development. Great</p>



Strength	<p>for overcoming plateaus in your strength or speed training, complements well your plyometric workouts.</p> <p>Use up to 3 times a week per muscle group, in between or after your strength training workouts.</p> <p><b>DURATION: 9-15 MINS</b></p> <p><b>RECOMMENDED MUSCLE GROUPS: BICEPS, HAMSTRINGS, PECS, QUADS, TRICEPS</b></p>
Active Recovery	<p>Reduces blood lactate accumulation and speeds up muscle recovery after a hard training session.</p> <p>Use within 2 hours after intensive training.</p> <p><b>DURATION: 20 MINUTES</b></p>
Potentiation	<p>Increases muscle contraction speed and prepares muscles for the maximum output. Potentiation Program is a great warm-up tool.</p> <p>Use as advanced warm up before important events and competitions.</p> <p><b>DURATION: 4 MINUTES</b></p>
Massage	<p>Temporarily increases blood circulation in the area applied, promotes muscle relaxation. Great add-on for your rest days.</p> <p>Apply during your rest periods.</p>

	DURATION: <b>20 MINUTES</b>
Short Message	<p>Temporarily increases blood circulation in the area applied, promotes muscle relaxation. Great add-on for your rest days.</p> <p>Apply during your rest periods.</p> <p>DURATION: <b>11 MINUTES</b></p>

## Running Exercise Programs and Configuring Intensities

Once the muscle group and exercise mode have been selected, stimulation can be started, stopped and paused using the MOBILE APP's on-screen controls.


The timer will be set automatically based on the selected exercise mode.



While the exercise program is running, adjust the stimulation intensity to a comfortable level using the on-screen controls.

## MOBILE APP Indicators

The **MOBILE APP** has icons to indicate the **STIM** battery charge.

### Battery Status Icon

Icon	Meaning
	<b>Charged</b> - Fully charged

	<b>Discharging</b> - Partially charged
	<b>Low Battery</b> - Less than 20% charge remaining

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# System Cleaning and Maintenance

## General System Maintenance

The following general maintenance guidelines should be followed to ensure safe and effective use of the StimRay system:

- Inspect all components prior to use. Do not use any components showing signs of damage.
- Do not store or operate any of the system components outside their specified operating and storage conditions (see “Environmental Specifications” in the Technical Information section of this manual).
- All system components can be cleaned as necessary by wiping with a soft cloth dampened with clean water.



**WARNING:** Do not immerse components in water or any other liquid. Doing so can permanently damage the electronics.

## ELECTRODES Maintenance

### ELECTRODE Body Replacement

The StimRay **ELECTRODES** should be replaced in either of the following cases:

1. If there is any noticeable damage or separation of materials;
2. After six (6) months of daily use.

For re-ordering information see “Contact & Reordering Information” at the end of this manual.

### Hydrogel Pad Replacement

The ELECTRODE hydrogel pads are intended to be replaced regularly to ensure adequate adhesion to the skin, and reliable stimulation delivery. Hydrogel pads should be replaced in either of the following cases:

1. Hydrogel pads are dirty and/or no longer adhere well to the skin
2. After one (1) week of daily use.

The life of the electrodes varies depending on skin conditions, amount of use, type of stimulation, storage and climate. Electrode life may be extended by carefully following these tips on application, removal, and storage.

- 1- Avoid touching the Hydrogel Pad, lift a corner of the Electrode and slowly peel the electrode off the skin, touching the adhesive gel as little as possible.
- 2- Place the electrodes back immediately after each use to its protective plastic cover.
- 3- Return the electrodes back into storage Bag and reseal tightly to prevent Dry-out.
- 4- Store at room or cool temperature and keep out of direct sunlight

For re-ordering information see “Contact & Reordering Information” at the end of this manual.

## Disposal Information

Rehabtronics Inc. considers the environment in all aspects of the product lifecycle, from design and engineering to packaging and recycling. We recommend that customers dispose of their used StimRay components in an environmentally sound manner.

It is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



**CAUTION:** Do not dispose of electronic components with normal household waste. Contact your local waste-management services for information on how to best dispose of electronic equipment.

## Troubleshooting

### Electrode Placement Troubleshooting

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# Physical Reactions

## Pain or Discomfort

If used as directed, the StimRay should not cause any pain. Mild discomfort may be experienced when using the StimRay system, but is easily remedied in most cases. The following table describes possible sources of discomfort, and the appropriate actions to take:

Source of Discomfort	Recommended Action(s)
Increase in sensitivity to stimulation over time	Decrease stimulation intensities to comfortable levels. If discomfort persists, discontinue use and consult your healthcare professional.
Fatigue or soreness following prolonged use	Discontinue use until symptoms have cleared. If symptoms do not dissipate within a day of ceasing use, consult your healthcare professional.



**WARNING:** If persistent pain is experienced, discontinue use immediately and contact your healthcare professional.



## Allergic Reactions

All StimRay materials have been selected and tested to ensure they are biocompatible, hypoallergenic, and free of any toxic substances. Nevertheless, if allergic reaction to materials is suspected, discontinue use immediately and contact your healthcare professional.

## Skin Irritation

Some reddening and indentation of the skin under electrodes is normal following a period of use, and further mild skin irritation may be experienced depending on factors such as the environment, duration of use, and skin-sensitivity.

The following guidance should be followed to mitigate possible skin irritation:

- Limit wearing the **ELECTRODES** to a maximum of 2 hours a day.
- If any sort of skin irritation develops, discontinue use until the symptoms have cleared.



**WARNING:** If persistent skin irritation is experienced that does not clear within hours of removing the **ELECTRODES**, discontinue use and contact your healthcare professional.

## Device Use Troubleshooting

### General Troubleshooting

Issue	Recommended Action(s)
Device performance issues or unanticipated behavior.	Discontinue use and contact customer support. (see “Contact and Reordering Information” at the end of this manual)

### Error Messages

The following table lists possible error messages that may appear, and the recommended actions to take:

DISPLAY Message	Potential Cause(s)	Recommended Action(s)
Low Battery on my StimRay	Battery is low	Recharge the Lithium ion battery
High Temperature fault on my StimRay	internal heating of components	Remove the StimRay from the electrode holder, wait until it cools down. Try it again. If the fault persists contact Rehabtronics.inc.
Electrode fault on my StimRay	Electrode not making good contact with skin or Stimray not making good contact with the electrode connector.	Remove the electrode, reapply the gel. remove and place back the StimRay onto the electrode holder. If problem persists change the electrodes.
System Fault on my StimRay	Component failure or StimRay not making a good contact with the electrode holder.	Remove and place back the StimRay unit to the electrode connector. If problem persists replace the electrode assembly. If problem still not resolved, contact Rehabtronics inc.

## Technical Information

### Environmental Specifications

<b>Operating Conditions</b>	Temperature: +5 °C to +40 °C (41 °F to 104 °F) Relative Humidity: 15% to 93% (non-condensing) Pressure: 70 kPa to 106 kPa (10.2 psi to 15.4 psi)
<b>Transport &amp; Storage Conditions</b>	Temperature: -25 °C to +70 °C (-13 °F to 158 °F) Relative Humidity: 5% to 100% (non-condensing) Pressure: 70 kPa to 106 kPa (10.2 psi to 15.4 psi)

### Electrical Component Specifications

	<b>CHARGER</b>	<b>STIM</b>
<b>Model Number</b>	CSCG1	CSST1
<b>Equipment Usage &amp; Type</b>	Non Transit-Operable Portable Equipment	Transit-Operable Body-Worn Equipment
<b>Mode of Operation</b>	Continuous	Continuous
<b>Applied Part Type</b>	N/A	BF Applied Part
<b>Means of Supply Mains Isolation</b>	Direct plug-in adaptor	N/A (battery-powered)
<b>Power Specifications</b>	USB Powered 5V, 1 - 2A	Internally Powered 3.7V, 310 - 330 mAh Rechargeable Lithium Ion Battery

Stimulation Specifications

The following table provides technical details of the stimulation pulses delivered by the StimRay system:

Stimulation Characteristic	StimRay Specification
Waveform Phase	Biphasic with passive recovery
Waveform Shape	Rectangular
Maximum Output Voltage (±10%)	80-100 mA (depending on pulse width)
Maximum Output Current (±10%)	100 mA @ 500 ohms 100 mA @ 2 kohms 0 mA @ 20 k Ohm (fault state)
Pulse Width	125 uS - 400 uS
Pulse Duration	1 mS
Pulse Frequency	1 Hz - 125 Hz

## Wireless Specifications

The following table details the wireless specifications for the **STIM**:

<b>Operating Frequency Range</b>	2402– 2480 MHz
<b>Operating Frequencies</b>	2402,2426 and 2480 in advertising mode and other 37 channels in the range of 2402-2480 MHz
<b>Data Rate</b>	1 Mbps
<b>Maximum Transmit Power</b>	0 dBm
<b>Modulation Scheme</b>	GFSK
<b>Modulating Signal Type</b>	Binary Data
<b>Modulation Baud Rate</b>	1 MHz
<b>RF Frequency Channels</b>	40 Channels
<b>Channel Spacing</b>	2 MHz + channel hopping
<b>Antenna Type</b>	Printed F type PCB antenna with 5 dBi maximum gain.
<b>Transceiver Duplex Scheme</b>	Time Division Duplexing
<b>Bit Error Rate</b>	Less than 0.1%
<b>Packet Error Rate</b>	Less than 5%
<b>Receiver Sensitivity</b>	-96 dBm
<b>Command Delay</b>	Less than 1 Second
<b>Transmitter Duty Cycle</b>	Less than 0.2%
<b>Operating Range</b>	Up to 5 meters

**NOTE:** The Federal Aviation Administration rules require that all radio-transmitting devices be turned off during flight.

### **FCC Regulator Statements**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the Federal Communication Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by doing one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

### **RF Exposure Warning**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 5 mm during normal operation and must not be co-located or operating in conjunction with any other antenna or transmitter.

### **IC Regulatory Statements**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)/NMB-3(B)

### **RF Exposure Information**

This equipment complies with ISSED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must be installed to provide a separation distance of at least 5 mm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme avec ISSED RSS-102 des limites d'exposition aux rayonnements définies pour un environnement non contrôlé. Cet émetteur doit être installé à au moins 5 mm de toute personne et ne doit pas être colocalisé ou fonctionner en association avec une autre antenne ou émetteur.

Electromagnetic Compatibility



**WARNING:** The StimRay System should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the system should be observed to verify normal operation in the configuration in which it will be used.



**WARNING:** Use of any system components other than those specified or supplied by Rehabtronics Inc. may result in increased emissions or decreased immunity of the equipment, and may cause the system to be non-compliant with the electromagnetic compatibility requirements of IEC 60601-1-2:2007.

Guidance and Manufacturer’s Declaration – Electromagnetic Emissions		
The StimRay System and all its system components are intended for use in the electromagnetic environment specified below. The customer or the user of the StimRay System should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment - Guidance

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Recommended separation distances between portable and mobile RF communications equipment and the StimRay System			
<p>The StimRay System and all its system components are intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the StimRay System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the components of the StimRay System as recommended below, according to the maximum output power of the communications equipment.</p>			
Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d = [\frac{3,5}{V_1}] \sqrt{P}$	$d = [\frac{3,5}{E_1}] \sqrt{P}$	$d = [\frac{7}{E_1}] \sqrt{P}$



Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
The StimRay System and all its system components are intended for use in the electromagnetic environment specified below. The customer or the user of the StimRay System should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance

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Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
The StimRay System and all its system components are intended for use in the electromagnetic environment specified below. The customer or the user of the StimRay System should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance

## Contact & Reordering Information

For device support, or to reorder components, contact Rehabtronics Inc. via any of the following channels:



**Manufactured By:**  
**Rehabtronics Inc.**  
**#4352, 10230 Jasper Ave.**  
**Edmonton, Alberta,**  
**Canada T5J 4P6**

**Web:** [www.rehabtronics.com](http://www.rehabtronics.com)  
**Email:** [support@rehabtronics.com](mailto:support@rehabtronics.com)  
**Phone:** 1-866-896-7277

If reordering components, please refer to the model (REF) number as indicated in the table below, or on the component labels:

System Component Re-Ordering		
System Component	Model (REF) / Re-order Number	Recommended Re-order Interval (component service life)
Stim	CSST1	4 years
Charger	CSCG1	4 years
Electrode	CSED1	6 months
Hydrogel Pads	CSEP1	1 week

For inquires or re-ordering outside Canada, contact your local StimRay distributor.  
For health-related concerns, contact your health care professional.