DIY Treatment Device for Restless Legs Syndrome

Instruction Manual

https://nd3788.wixsite.com/restful-legs

Contents

Overview

This information manual is a guide to creating your own device for a nonpharmaceutical treatment for Restless Legs Syndrome (RLS). The assembly presented in this manual is just a suggestion and can be modified for optimal relief. More information about available nonpharmaceutical treatment options can found on our website.

The following manual will take you through building a device with three types of stimulation:

1. Electrical
2. Thermal
3. Tactile

Feel free to try any combination of the suggested treatments until you find what works for you.

Key Steps

An overview of the steps to construct your own RLS treatment device.

The idea of this DIY device is to combine treatment modalities. Below is our recommended order of assembling the device to hold it together while getting all three types of stimulation.

Components

- Electrical: TENS unit (details on pg. 5)
- Thermal: Heating/cooling packs (details on pg. 8)
- Tactile: Compression system (details on pg. 9)

Steps

1. Apply your TENS patches. Suggested placement is directly on the area of discomfort (see pg. 6-7).
2. Arrange your heating/cooling packs between the TENS patches so that they are in direct contact with the skin. If the packs need preheating/cooling, that should be done before assembly.
3. Place the compression sleeve over the entire area of discomfort (including the TENS and thermal packs).
4. Turn on compression pump and TENS battery.

Electrical Stimulation

For electrical stimulation we recommend using a TENS unit. This is a battery-powered device that applies low voltage current through electrode patches to provide pain relief. While we recommend starting directly on the area of discomfort, you will likely need to go through some trial and error with the electrode placement to find optimal pain relief. One alternative area to the leg that has been effective for many patients is the lower back.

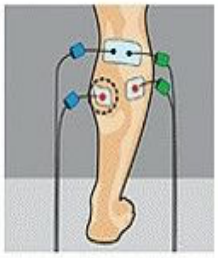
WARNINGS: Electric therapy should be avoided for those with pacemakers, heart conditions, and those who are or might be pregnant. Please read all information provided by TENS supplies before use.

Preparing the skin and electrodes

- Clean the area of intended electrode placement using an antiseptic wipe
- For the best results, remove any hair from the area
- Peel the plastic cover off the sticky region of the electrode
- Place electrode on prepared area of skin (information on electrode placement on pg. 6-7)
- Connect electrodes to their power supply – cords should either pop onto the electrode's metal tab backing or plug into jack connector wire in the electrodes wiring
- *Note it is beneficial to distinguish the negative electrodes (black) from the positive electrodes (red). If no information on positive versus negative electrodes is provided, just use the placement guidelines ignoring the type of electrode.*

Electrode Placement (TENS)

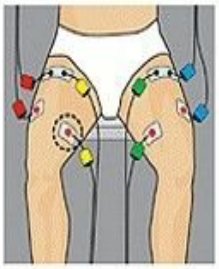
Read all precautions and instructions from manufacturer and do not exceed suggested voltages. The maximum voltage will be different depending where you place electrodes and how many you are using.



Calf Muscle

The negative electrode(s) should be placed at the top of the calf muscle below the back of the knee.

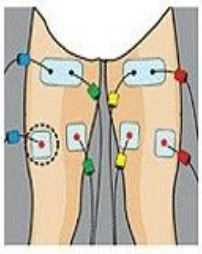
The positive electrode(s) should be placed on the bottom-half of the calf muscle.



Quadriceps

The negative electrode(s) should be placed at the top of the front thigh, right above the top of the quadricep muscle.

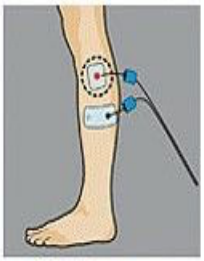
The positive electrode(s) should be placed above the knee and below the quadricep.



Hamstrings

The negative electrode(s) should be placed below the buttock at the top of the hamstring muscle.

The positive electrode(s) should be placed above the back of the knee. If using more than one electrode on one leg, place them on each side of the bottom of the hamstring.



Peroneus Muscle

Directly below the bend of the knee on the outer side there is a bony protrusion. Locate this bone and place the positive electrode beside it towards the front of the leg.

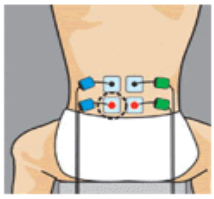
The negative electrode should be placed below the positive one.

Electrode Placement (TENS)

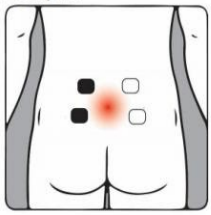
Several electrode configurations can be used for applying TENS therapy to **back muscles**. Users should test different configurations to determine which works best for them. Electrode placement is easiest with the assistance of another individual. All electrodes should be placed below the shoulder blades. In general, the closer together the electrode pattern is, the more concentrated the TENS therapy will feel.

Lower Back

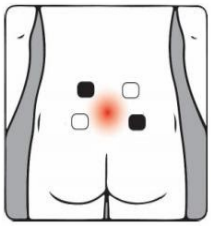
For lower back muscles, several electrode configurations can be used:



1. Place negative electrode(s) in the middle of the back, slightly below chest height. Place positive electrode(s) on the lower back. If using multiple electrodes both negative and both positive electrodes should be side-by-side at the same height.

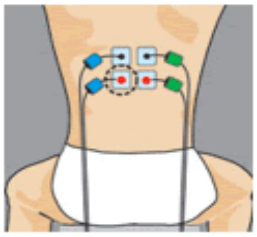


2. Similar placement as Configuration 1. Instead of having the same type of electrodes side-by-side, vertically align each type of electrode. This means you will have the negative electrodes on one side and the positive electrodes on the other.



3. Similar placement as Configurations 1 & 2. Align the same type of electrodes diagonally. You should have negative electrodes with positive electrodes directly to the side and below/above and vice versa.

Upper Back



Place the negative electrode(s) directly below the shoulder blades. If using multiple negative electrodes, place them side-by-side at the same height.

Place the positive electrode(s) midway down the back, about at the height of the pectoralis muscles. If using multiple positive electrodes, place them side-by-side at the same height.

Thermal Stimulation

There are many viable choices to attain thermal stimulation. Some of these include heating, some cooling, and some both. We recommend testing different heating options before choosing one to incorporate into your device as thermal stimulation varies in efficacy from patient to patient. For this application, a packet or multiple packets will be the most convenient.

Examples of thermal packet options:

- **ThermaCare HeatWraps** – These are single use wraps that provide mild heating for up to 8 hours. The cost ranges from about $5-$10.
- **IcyHot Patches** – Similar to ThermaCare in terms of intensity, price, and ingredients. Available in regular and advanced formulations.
- **Heat or Ice Packs** – If you don't want to purchase a product, heat or ice packs you may have lying around the house will work just as well. You can use microwavable pads for heating, ice packs or even frozen vegetables for cooling, really anything that can apply heating or cooling temperatures to your body.

Tactile Stimulation

For the tactile component, we suggest compression which can be achieved by one of two options: (1) Buy a pneumatic compression device or (2) build your own. Information about different compression devices on the market can be found on our website (https://nd3788.wixsite.com/restful-legs).

Build Your Own Compression Device

Materials

- Two blood pressure cuffs
- 3 pieces of tubing
  (One purchase option: https://www.homedepot.com/p/UDP-1-4-in-O-D-x-0-170-in-I-D-x-25-ft-Natural-Polyethylene-Tubing-T16007001/304185139)
- T connector
  (One purchase option: https://www.homedepot.com/p/Orbit-1-4-in-Barb-Tee-Pack-of-25-67401/202937863)
- Syringe pump (from our site) or other air pump

Steps

1. Remove the existing tubing from the blood pressure cuffs (it should pop off easily).
2. Attach new tubing where original tubing was just removed. It should slide with some wiggling so it is air tight.
3. Repeat for the second cuff.
4. Attach tubing from each cuff to sides of the T connector.
5. Attach last piece of tubing to the remaining port of the T connector.
6. Attach the open end of the tubing to your air pump or syringe pump (see website for syringe pump assembly instructions).

Concluding Notes

This instruction manual is intended to give patients a guideline for testing and combining different physical stimulations as an alternative treatment to pharmaceuticals. We do want to acknowledge that for very severe cases of RLS these therapies may not be effective. We hope some patients are able to use and modify this guideline to find a nonpharmaceutical treatment that effectively relieves symptoms and saves money. More information about drug-free treatments, details on DIY treatment devices, and our team's background can be found on our website *https://nd3788.wixsite.com/restful-legs*.