

<b>Author Year</b> <b>Country</b> <b>PEDro Score</b> <b>Research Design</b> <b>Total Sample Size</b>	<b>Methods</b>	<b>Outcome</b>
Karri et al. 2018 USA RCT PEDro= N=21	<p><b>Population:</b> SCI+NP (n=10): Mean age=48.2 yr; Gender: males=10, females=0; Time since injury=13.3; Level of injury: C=7, T=0, L=3; Severity of injury: AIS A=2, B=1, C=4, D=3. SCI-NP (n=11): Mean age=38.6 yr; Gender: males=8, females=3; Time since injury=11.4 yr; Level of injury= C=4, T=7, L=0; Severity of injury: AIS A=3, B=2, C=5, D=1; Type of pain=neuropathic.</p> <p><b>Intervention:</b> SCI+NP patients received a breathing-controlled electrical stimulation (BreESTim) or a fake BreESTim randomly on separate days with at least a 3 day break between, both SCI-NP and SCI+NP participants had their visual analog scale pain scores and heart rate variability taken for comparison. Note that only the SCI+NP group had the BreESTim (active and null).</p> <p><b>Outcome Measures:</b> VAS scores and HRV.</p>	<ol style="list-style-type: none"> <li>1. Significant difference in VAS scores across time for the active treatment (p&lt;0.01) but not for the null treatment group (p&gt;0.01).</li> <li>2. At baseline both the HRV time domain (p=0.01) and the HRV frequency domain (p&lt;0.05) were significantly lower in the SCI+NP group than in the SCI-NP group.</li> <li>3. Significant interaction between effects of time and treatment and HRV for both time parameters (p=0.04).</li> <li>4. Parasympathetic tone profoundly increased across time only for the active intervention (p&lt;0.05).</li> <li>5. Significant increase across time with active treatment for both time parameters (p=0.02) but no differences for the null treatment (p&gt;0.05).</li> <li>6. Frequency parameters showed no significant differences across time for the null or active treatments (p&gt;0.05).</li> </ol>
Li et al. 2018 USA RCT Crossover PEDro=6 N=12	<p><b>Population:</b> Mean age=43.4±11.7 yr; Gender: males=7, females=5; Time since injury=15.5±12.3 yr; Level of injury: C=10, T=2, L=0; Severity of injury: all incomplete; Type of pain=neuropathic.</p> <p><b>Intervention:</b> Participants completed both the real and sham transcranial direct cranial stimulation (tDCS) followed by active breathing-controlled electrical stimulation/conventional electrical stimulation (BreESTim and ESTim respectively) and were randomized to which they would complete in the first session and three days later in the second session.</p> <p><b>Outcome Measures:</b> Visual analog scores (VAS) for pain and analgesic effects.</p>	<ol style="list-style-type: none"> <li>1. 10 of the 12 participants completed both conditions because of timing conflicts.</li> <li>2. Positive analgesic effects were seen in active tDCS, but only in 4 of 10 participants in the sham tDCS and in BreESTim all but one participant saw positive analgesic effects.</li> <li>3. No difference in active and sham tDCS seen at the group level.</li> <li>4. VAS decreased from 5.7-5.1 after active tDCS and from 6.0-5.4 after the sham tDCS.</li> <li>5. Significant decrease in VAS after BreESTim in the active and sham tDCS group (p&lt;0.00001 for both).</li> <li>6. All 12 participants completed the active tDCS and BreESTim and a main effect of time was observed to be significant (p&lt;0.00001).</li> <li>7. No significant change of VAS observed after active tDCS, but a significant change was seen after active BeESTim (p&lt;0.05).</li> </ol>
Li et al. 2016 (1) USA Pre-Post N=13	<p><b>Population:</b> Mean age=48.5±12.3 yr; Gender: males=6, females=7; Time since injury=58.2±45.8 mo; Level of injury: C=7, T=4, L=2; Severity of injury: AIS A=2,</p>	<ol style="list-style-type: none"> <li>1. VAS average scores decreased from 6.3-3.7 after BreESTim120 and from 5.2-4.4 after ESTim120.</li> </ol>

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	<p>B=6, C=1, D=4; Type of pain=neuropathic.</p> <p><b>Intervention:</b> In the first of two experiments in this study, each of the 13 participants received both breathing-controlled electrical stimulation (BreESTim) and conventional electrical stimulation (ESTim) with at least 3 days between bouts and 120 electrical stimuli each.</p> <p><b>Outcome Measures:</b> Visual analog score (VAS) for pain and analgesic effects.</p>	<ol style="list-style-type: none"> <li>2. Significant main effect of intervention (<math>p &lt; 0.001</math>) with no main effect if stim.</li> <li>3. Significant interaction between intervention and stim observed (<math>p &lt; 0.001</math>).</li> <li>4. Significantly greater reduction in VAS score after BreESTim120 than after ESTim120 (<math>p &lt; 0.001</math>) and the duration of the analgesic effect was significantly longer after BreESTim120 compared to ESTim120 (<math>p = 0.04</math>).</li> <li>5. Significantly greater intensity of electrical current during ESTim120 compared to BreESTim120 (<math>p = 0.0189</math>).</li> </ol>