

Use of Bilateral Stimulation within a Multi-Modal treatment approach for Complex Regional Pain Syndrome

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Background

- Complex Regional Pain Syndrome (CRPS) is a neuropathic disorder with many symptoms that are regulated by the sympathetic nervous system
- When the sympathetic nervous system is dysregulated, the body goes into fight, flight or freeze.
- Bilateral stimulation is a modality used in Eye Movement Desensitization and Reprocessing (EMDR) treatment to address trauma, anxiety, etc. possibly by activating the parasympathetic system and inhibition of the sympathetic system
- Bi-Tapps are a form of bilateral stimulation that were designed to provide tactile stimulation to help with autonomic nervous system regulation

The Why

- Why does this work: we are treating the same nervous system being treated with bilateral stimulation with EMDR by mental health clinicians
- Benefits: Use of Bi-Tapps has helped patients with tolerate interventions necessary to improve functional outcomes
- In our clinic, we have used Bi-Tapps with a wide variety of patients – with diagnoses including CRPS, chronic pain, amputations, distal radius fractures, phalanx fractures

Clinical Takeaway

- Bi-Tapps are a tool to help improve tolerance of therapy – other forms of bilateral stimulation (ex: sound) can be utilized as well
- Often patients are more relaxed and have less reactivity to traditional therapeutic interventions
- It is important to incorporate Pain Neuroscience Education in treatment sessions to improve understanding of pain processes
- Patients still need active participation in the therapy process to achieve successful outcomes

Intervention Overview

- This intervention has been used with patients diagnosed with CRPS as well as those with chronic pain
- When a patient presents with symptoms of hyperalgesia/allodynia, vasomotor, sudomotor or trophic changes – they may be having an increased sympathetic response
- It is likely the amygdala is dysregulated
- The amygdala is one of the most active areas in the brain's pain meeting during a pain experience
- In the clinic – Bi-Tapps are placed on the wrists/upper arms (or ankles if needed) and used during therapy session allowing for therapeutic interventions to take place



References

- Ghanbari Nia, N., Afrasiabfar, A., & Behnamoghdam, M. (2018). Comparing the effect of eye movement desensitization and reprocessing (EMDR) with guided imagery on pain severity in patients with rheumatoid arthritis. *Journal of Pain Research, Volume 11*, 2107–2113. <https://doi.org/10.2147/jpr.s158981>
- Goebel, A., Barker, C., Birklein, F., Brunner, F., Casale, R., Eccleston, C., Eisenberg, E., McCabe, C. S., Moseley, G. L., Perez, R., Perrot, S., Terkelsen, A., Thomassen, I., Zyluk, A., & Wells, C. (2019). Standards for the diagnosis and management of Complex Regional pain syndrome: Results of a european pain federation task force. *European Journal of Pain, 23*(4), 641–651. <https://doi.org/10.1002/ejp.1362>
- Knudsen, L. F., Terkelsen, A. J., Drummond, P. D., & Birklein, F. (2019). Complex regional pain syndrome: A focus on the autonomic nervous system. *Clinical Autonomic Research, 29*(4), 457–467. <https://doi.org/10.1007/s10286-019-00612-0>
- Shepherd, M., Louw, A., & Padalak, J. (2018). The clinical application of pain neuroscience, graded motor imagery, and graded activity with complex regional pain syndrome—a case report. *Physiotherapy Theory and Practice, 36*(9), 1043–1055. <https://doi.org/10.1080/09593985.2018.1548047>



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WINDOW OF TOLERANCE

Gaining a working understanding of the Window of Tolerance is the single most important thing that will help you effectively manage your stress and improve your relationships. Learning to recognize when you are outside your window of tolerance and utilizing resources to help your nervous system return to the green zone is a key component to your emotional health.

<p>Sympathetic System is Activated</p> <ul style="list-style-type: none"> Feeling Overwhelmed Can't Think Clearly Rigid Or Chaotic Thinking Anxious / Panic Emotional Reactivity Stress Patterns Emerge No New Learning Can Take Place 	<p>Hyper-Arousal Red Zone Too Much Arousal</p> 
<p>Yellow Zone (mild symptoms from list above)</p>	
<p>Parasympathetic System is Activated</p> <ul style="list-style-type: none"> Experience a Full Range of Emotions But with a Sense of Control and Options State of Mind is Calm, Alert, Flexible, Adaptable Able to Self Regulate and Connect with Others New Learning Can Take Place 	<p>Window of Tolerance Green Zone Optimal Level of Functioning</p> 
<p>Yellow Zone (mild symptoms from list below)</p>	
<ul style="list-style-type: none"> Poor Contact with Others Isolation / Withdrawal from Others Numbing of Emotions Limited Awareness of Sensation Hard Time Tracking Conversation No New Learning Can Take Place 	<p>Hypo-Arousal Blue Zone Too Little Arousal</p> 

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