**CONCLUSION**

Final assessment of ratings

**Tolerance**

Calculation of 50% and 75% second 8 post measured variables

**INTRODUCTION**

Important components of intrinsic pain regulatory systems are modulated by cardiovascular dynamics that influence baroreceptor sensitivity (BRS). The present study evaluated the effects of extinction training combined with electrical stimulation administered during either the sympathetic or diastolic phases of the cardiac cycle delivered in a randomized order (“sympathetic extinction training”, SET) in patients with fibromyalgia syndrome (FMS). SET was compared to treatment with extinction training combined with electrical stimulation delivered independent of the cardiac cycle a ‘placebo’ condition (PC).

**METHOD**

Forty patients who fulfilled the American College of Rheumatology criteria for FMS and showed an elevated blood pressure response to a laboratory stressor termed hypertensive stress reactivity were randomly assigned to SET (n = 20), or PC (n = 20). Assessments of clinical pain, pain threshold, baroreflex sensitivity (BRS), blood pressure and heart rate, cognitive and behavioural variables as well as sleep architecture and sympathetic outflow measured by microdialgy were performed pretreatment and post-treatment as well as 6 to 12 months posttreatment.

**RESULTS.**

Both sensory and pain threshold as well as pain tolerance increased significantly immediately and 6-12 months after SET.

**Figure 3.** Changes of sensory, pain thresholds and pain tolerance immediately and 6-12 months after SET.

**Figure 4.** Changes of BRS immediately and 6-12 months after SET and PC.

The pain reduction was associated with a significant increase in BRS.

**Figure 5.** Changes in blood pressure, EMG and physical activity after SET and PC.

**Figure 6.** Decrease of the sympathetic outflow after SET

**CONCLUSION**

These results suggest that SET is effective in treating patients with FMS producing long lasting pain remission. Furthermore, the findings show that the [1] greater blood pressure responses to stress predict a greater reduction in clinical pain report and [2] increase in physical activity observed following SET is associated with a restoration of BRS, cortical pain inhibition, sympathetic outflow and sleep architecture. Even though baseline BRS is diminished in FMS patients, electrical stimulation delivered in a manner dependent on cardiac cycle phase when combined with extinction training is highly effective in reducing pain and restoring functions in a FMS subgroup characterized by hypertensive blood pressure stress reactivity.

**Design of Systolic Extinction Training - SET**

10 Sessions with 2 hours in 5 weeks

**Hour 1:** Structured Extinction Training with Training of Perception and Increase of Physical Activity

**Hour 2:** BRS modifying Stimulation by delivering pain-free and two clinical pain stimuli adjusted by individual pain tolerance dependent on cardiac cycle

**Figure 1.** Design of SET

**Figure 2.** Changes of clinical pain immediately and 6-12 months after SET and PC

**Figure 3.** Changes of sensory, pain thresholds and pain tolerance immediately and 6-12 months after SET

**Figure 4.** Changes of BRS immediately and 6-12 months after SET and PC

**Figure 5.** Changes in blood pressure, EMG and physical activity after SET and PC

**Figure 6.** Decrease of the sympathetic outflow after SET

**Figure 7.** Restoration of sleep architecture after SET

**K. Thieme1,4, PhD, H. Kraemer2, MD, U. Koehler3, MD, T. Meller1, MA, R. Malinowskir1, MA, W. Maixner4, DSS, PhD, R.H. Gracey1, PhD**

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