



Randomized Controlled Trial > Am J Health Promot. 2018 Jan;32(1):112-122.

doi: 10.1177/0890117116661154. Epub 2016 Aug 12.

# Epigenetic Effects of PTSD Remediation in Veterans Using Clinical Emotional Freedom Techniques: A Randomized Controlled Pilot Study

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PMID: 27520015 DOI: 10.1177/0890117116661154

## Abstract

**Purpose:** To assess the feasibility of measuring changes in gene expression associated with post-traumatic stress disorder (PTSD) treatment using emotional freedom techniques (EFT).

**Design:** Participants were randomized into an EFT group receiving EFT and treatment as usual (TAU) throughout a 10-week intervention period and a group receiving only TAU during the intervention period and then receiving EFT.

**Setting:** A community clinic and a research institute in California.

**Participants:** Sixteen veterans with clinical levels of PTSD symptoms.

**Intervention:** Ten hour-long sessions of EFT.

**Measures:** Messenger RNA levels for a focused panel of 93 genes related to PTSD. The Symptom Assessment 45 questionnaire, Hospital Anxiety and Depression Scale, Insomnia Severity Scale, SF-12v2 for physical impairments, and Rivermead Postconcussion Symptoms Questionnaire.

**Analysis:** Pre-, posttreatment, and follow-up mean scores on questionnaires were assessed using repeated measures 1-way analysis of variance. A Student t test and post hoc analyses were performed on gene expression data.

**Results:** Post-traumatic stress disorder symptoms declined significantly in the EFT group (-53%, P < .0001). Participants maintained their gains on follow-up. Significant differential expression of 6 genes was found ( P < .05) when comparing the expression levels before and after the intervention period in participants receiving EFT.

**Conclusion:** Study results identify candidate gene expression correlates of successful PTSD treatment, providing guidelines for the design of further studies aimed at exploring the epigenetic effects of EFT.

**Keywords:** EFT; PTSD; emotional freedom techniques; epigenetics; gene expression; veterans.

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