

Effects of Self-induced Unclassified Therapeutic Tremors on Quality of Life Among Non-professional Caregivers: A Pilot Study

[David Berceli](#), PhD,  [Melanie Salmon](#), MB BCh (Rand), [Robin Bonifas](#), PhD, MSW, and [Nkem Ndefo](#), RN, CNM

David Berceli, Trauma Recovery Services Phoenix, Arizona (Dr Berceli), United States;

[Contributor Information](#).

 Corresponding author.

Correspondence David Berceli, PhD ; Email: dave@traumaprevention.com

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Abstract

[Go to:](#)

Background:

Chronic stress has a negative effect on health-related quality of life. In challenging environments with multiple stressors, limited access to mental health resources, and cultural impediments to health care delivery, effective and accessible methods of stress management are critical. Activation of self-induced therapeutic tremors (SUTT) may mitigate excess stress and improve quality of life (QoL) under such conditions.

Objectives:

To investigate (1) the feasibility of a 10-week SUTT training and practice intervention and (2) the association between participants' use of SUTT and any changes in their self-reported health-related QoL.

Methods:

All staff members of the SOS Children's Village in Cape Town, South Africa (n=21) received 10 weeks of SUTT weekly training and group practice along with independent SUTT practice 2 to 3 times weekly. A wellness-based QoL questionnaire was administered before and after the intervention, and participants were instructed to keep a diary of their experiences.

Results:

Following 10 weeks of SUTT instruction and practice (1) there was a 91.3% adherence rate to the intervention protocol and (2) participants reported their overall impressions of changes in all five QoL domains increased at a statistically significant level: mean scores were 3.81 at pre-test and 4.35 at post-test ($P<.05$).

Conclusions:

A 10-week SUTT instruction and practice protocol is both highly feasible among non-professional caregivers and a potential therapeutic method for improving QoL.

Musculoskeletal tremors are a common neurophysiological phenomena¹ experienced before, during, or following stressful events, and as such are termed enhanced physiologic tremors.¹ Yet these tremors are generally perceived as a pathological expression of stress and are included in the diagnostic criteria in a number of psychological illnesses, such as panic attacks, social phobia, generalized anxiety disorder, and post-traumatic stress disorder.² The etiology, function, and inherent purpose of these tremors have received scant research attention, especially in relation to their widespread incidence.³

Dr David Berceci developed Tension and Trauma Releasing Exercises (TRE), an integrative neurophysiological approach^{4,5} that recognizes the homeostatic and thus therapeutic value of this type of tremor in the human body under stress. By using a similar but self-induced tremor to mechanically discharge physical tension, TRE thereby mitigates the experience of excess stress.^{6,9} The tremor evoked by TRE remains unclassified per the 1998 consensus statement on tremor developed by the Movement Disorder Society.¹ Proposed nomenclature for the TRE-induced tremor is self-induced unclassified therapeutic tremor (SUTT). While closest to an enhanced physiologic tremor, the SUTT has unique activation conditions, topography, frequency, and amplitude. Fundamentally an action tremor with both postural and isometric activation, the SUTT is augmented at rest, widely distributed, and has variable amplitude and frequency.^{4,5} TRE was initially developed for international use in high conflict zones and areas experiencing natural or man-made disasters. Designed as a self-directed somatic modality to be taught in group settings, the TRE technique is easily learned, reproduced, and practiced.⁴

It is widely accepted that chronic stress has a negative impact on health-related QoL.¹⁰ South Africa, in particular, experiences multiple stressors, including high rates of interpersonal violence, poverty, and unemployment, and one of the highest HIV infection prevalence rates globally.¹¹⁻¹³ This is compounded by limited access to mental health programs and treatment, with only nine mental health professionals per 100 000 population.¹³ Additionally South Africa is home to a heterogeneous population with numerous ethnic, language, and religious groups.¹³ There is a strong need for effective, financially accessible, and cross-culturally adaptive methods of stress reduction.

The study site was a representative NGO social service agency, SOS Children's Village Cape Town, South Africa. This site houses up to 141 abused, orphaned, and/or abandoned children referred by the South African Department of Social Development Children's Court. With only one professional social worker, the care delivery model relies on "House Mothers," who receive 4 months of training and then are responsible for the physical, emotional, and learning needs of up to eight children aged 3 to 17 years, grouped into "Family-Based Care" residential units.

Our objective was to examine (1) the feasibility of a 10-week SUTT training and practice intervention and (2) the association between participants' use of SUTT and any changes in their health-related quality of life as reported via questionnaire.

METHODS[Go to:](#)

This was a single-armed, non-controlled pilot study conducted with all staff at SOS Children's Village Cape Town in 2012. Participants gave their informed consent in writing after being given comprehensive information. After the first day of training, two of the 23 participants elected to leave the study for personal reasons. The remaining participants (N=21) included one professional, 17 non-professional (ie, "House Mothers"), and three support staff members.

Study participants received theoretical and experiential SUTT instruction in a group setting at weekly intervals

for 10 weeks. Training sessions were three and seven hours alternating weekly. Theoretical instruction included lecture and discussion on the anatomy, physiology, and psychology of the stress-trauma continuum. The experiential component involved demonstration and practice of the SUTT movement protocol. This protocol consists of seven discrete exercises performed in a prescribed sequence to induce the SUTT. Exercises that stretch the muscles of the feet, thighs, hips, and lower trunk are alternated with those that mildly fatigue muscles in the lower and upper legs, hips, buttocks, and lower torso. Though the SUTT may activate in any of the exercises, it is characteristically most prominent in the final exercise, which culminates in a passive supine position. Leg extension terminates the movement sequence by extinguishing the SUTT.^{4,5} Participants received a total of 20 hours theoretical instruction and 30 hours experiential practice. Participants were also required to independently practice SUTT two to three times each week and keep a simple non-standardized diary of their experience to increase engagement. Due to low literacy, the diaries were mostly incomplete or unused.

We chose the highly reliable Health, Wellness, and QoL Questionnaire (HWQoL) for its broad and coherent wellness focus explicitly reflecting the World Health Organization definition of health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”.¹⁴ The HWQoL is a 55 Likert-scale item inventory across five domains (*physical health, mental and emotional health, stress evaluation, life enjoyment, and overall quality of life*).¹⁵ We administered the HWQoL before and after the intervention. Paired-samples *t*-tests were conducted to assess differences across each of the measure's five domains following SUTT instruction and practice. Given the small sample size, an alpha value of .10 was used to determine statistical significance to assure detection of meaningful differences.

RESULTS

[Go to:](#)

Twenty-three individuals enrolled in the study with 21 completing the 10 week intervention period for a retention rate of 91.3%. Twenty-one individuals completed the HWQoL questionnaire, representing 19 women and two men. Ages ranged from 25 to 62 with an average age of 46.6 (SD=9.63). Six different ethnic, language, and/or religious groups were represented among the participants. Only three participants (14.3%) were above the poverty line and had an education level beyond basic literacy (Standard 8). All 17 (81%) of the “House Mothers” had only basic literacy and were below the poverty line.

As depicted in [Table 1](#), the mean score for physical health was 1.98 at pre-test and 2.08 at post-test ($P>.10$); the mean score for mental/emotional health was 2.27 at pre-test and 2.07 at post-test ($P>.10$). These changes were not statistically significant. The mean stress evaluation score at pre-test was 2.48 and at post-test was 2.47; this represents a non-statistically significant change. For *life enjoyment*, participants' mean score increased at a statistically significant level from 2.72 at pre-test to 3.32 at post-test ($P<.05$). Participants made small gains in *overall QoL*. Mean scores increased from 4.67 at pre-test to 4.94 at post-test, but this difference did not achieve statistical significance ($P>.10$).

Domain	Pre-Test Mean (SD)	Post-Test Mean (SD)	t
Physical health	1.98 (1.00)	2.08 (1.00)	0.48
Mental and emotional health	2.27 (1.00)	2.07 (1.00)	0.88
Stress evaluation	2.48 (1.00)	2.47 (1.00)	0.02
Life enjoyment	2.72 (1.00)	3.32 (1.00)	2.24*
Overall quality of life	4.67 (1.00)	4.94 (1.00)	0.88
Overall significance	0.01 (0.01)	0.01 (0.01)	0.000

[Table 1](#)

Changes in Health, Wellness, and Quality of Life Responses Following TRE Treatment (n=21)

However, their *overall impressions* regarding changes in all five QoL domains (*physical health, mental and emotional health, stress evaluation, life enjoyment, and overall QoL*) increased at a statistically significant level: mean scores were 3.81 at pre-test and 4.35 at post-test ($P<.05$). Participants experienced more life satisfaction after incorporating SUTT into their routines on a regular basis, with more frequent positive emotions toward themselves and greater confidence in their ability to deal with adversity.

Since participants did not report statistically significant improvements in *physical state*, *mental/emotional state*, *stress evaluation*, and *overall QoL* via their responses on each subscale but they reported they were doing better in these areas via *overall impressions*, an additional series of *t*-tests¹⁶ were run to assess changes in the individual items related to *overall impressions*. Results are depicted in [Table 2](#) and indicate that after SUTT treatment, participants report doing better at a statistically significant level in three areas: mental/emotional state, life enjoyment, and overall QoL. Mean scores related to mental/emotional state increased from 2.22 to 2.56 ($P<.10$); mean scores related to life enjoyment increased from 2.28 to 2.67 ($P<.05$); mean scores related to overall QoL increased from 2.28 to 2.61 ($P<.10$).

Domain	Mean pre-treatment	Mean post-treatment	P-value
Overall impressions related to health	2.22	2.56	.10
Overall impressions related to emotional state	2.22	2.56	.10
Overall impressions related to life enjoyment	2.28	2.67	.05
Overall impressions related to stress	2.28	2.67	.05
Overall impressions related to QoL	2.28	2.61	.10

[Table 2](#)

Changes in Overall Impressions Related to Health, Wellness, and Quality of Life Following TRE Treatment (n = 21)

LIMITATIONS

[Go to:](#)

The attempted collection of qualitative data was hindered by participants' low English literacy, which rendered the unstructured diaries unusable for analysis. However, the reliance on a single quantitative measure may have been offset by the high number of items in the HWQoL inventory across multiple domains. Given that this was a pilot study with a small sample size, there is a possibility that a larger sample could yield differing results. The fact that such statistically significant results were achieved with such a small sample suggest that the impact of SUTT may be quite significant and that a controlled trial with larger numbers of participants and multiple measures is clearly warranted.

CONCLUSION

[Go to:](#)

This is the first published study to examine the feasibility of a SUTT training and practice protocol and the effects of repeated activation of SUTT on QoL. In spite of the challenges of a chronically stressed, multiethnic, and low-literacy study population, a 10-week intervention of SUTT instruction and practice proved feasible among non-professional caregivers with no negative outcomes reported. Staff responded very favorably to the SUTT protocol with a retention rate of 91.3%. Statistically significant QoL gains were observed in the *Life Enjoyment* domain ($P<.05$) and for *Overall Impressions* in all five domains of the HWQoL questionnaire. As participants incorporated SUTT into their routines on a regular basis, they reported more frequent positive emotions toward themselves and greater confidence in their ability to deal with adversity. At the study conclusion, the participants requested that SUTT be offered to the children housed at the study site facility, further documenting the high acceptability of SUTT treatment. Results suggest that the systematic and repeated activation of the self-induced uncharacterized tremor mechanism holds promising therapeutic value. The increase of movement in a positive direction suggests that these uncharacterized tremors might be a natural neurophysiological response to mitigate excess stress.

Notes

[Go to:](#)

Disclosures The authors complete the ICMJE Form for Potential Conflicts of Interest. Dr Berceli disclosed that as the developer of the Tension and Trauma Releasing Exercises described in this study, he will receive royalties on the purchase of books and DVDs that contain the exercise process. The other authors had no conflicts to disclose.

Contributor Information

[Go to:](#)

David Berceli, Trauma Recovery Services Phoenix, Arizona (Dr Berceli), United States.

Melanie Salmon, private practice, Western Cape, South Africa (Ms Salmon), South Africa.

Robin Bonifas, School of Social Work, Arizona State University Phoenix (Dr Bonifas), United States.

Nkem Ndefo, private practice Los Angeles, California (Ms Ndefo), United States.

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[Go to:](#)

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