

Reduced Trauma Symptoms and Perceived Stress in Male Prison Inmates through the Transcendental Meditation Program: A Randomized Controlled Trial

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Perm J 2016 Fall;20(4):16-007

E-pub: 10/07/2016

<http://dx.doi.org/10.7812/TPP/16-007>

ABSTRACT

Context: Trauma events are four times more prevalent in inmates than in the general public and are associated with increased recidivism and other mental and physical health issues.

Objective: To evaluate the effects of Transcendental Meditation^a (TM) on trauma symptoms in male inmates.

Design: One hundred eighty-one inmates with a moderate- to high-risk criminal profile were randomly assigned to either the TM program or to a usual care control group.

Main Outcome Measures: The Trauma Symptom Checklist and the Perceived Stress Scale were administered at baseline and four-month posttest.

Results: Significant reductions in total trauma symptoms, anxiety, depression, dissociation, and sleep disturbance subscales, and perceived stress in the TM group were found compared with controls (all *p* values < 0.001). The high-trauma subgroup analysis further showed a higher magnitude of effects in the TM group compared with controls on all outcomes, with Cohen effect sizes ranging from 0.67 to 0.89.

Conclusion: Results are consistent with those of prior studies of the TM program in other populations and its effects on trauma symptoms and perceived stress.

INTRODUCTION

Trauma events are four times more prevalent in inmates than in the general public.¹ Elevated trauma symptoms are associated with poor lifestyle decision making and higher rates of recidivism.¹ Experience of trauma exposure also is associated with adverse mental and physical health conditions, including cardiovascular disease, metabolic disease, autoimmune disorders, and cancer.^{2,3}

Recent research suggests an evolving role for meditation therapies in populations with severe medical and psychiatric symptoms.^{4,5} Systematic reviews of clinical trials investigating meditation therapies such as the Transcendental Meditation^a (TM) technique reported evidence of benefits on outcomes ranging from anxiety and depression to hypertension.^{4,7}

Correctional facility residents represent one large-scale population exposed to heightened stress that may benefit from practicing meditation. Prison inmates report high levels of premorbid stress and increased exposure to trauma and violence before incarceration relative to the general population.^{8,9} Poor stress management skills may further contribute to behavioral problems among inmates during incarceration that could affect their ability to benefit from rehabilitation opportunities.

In a review of meditation practices in inmate populations, the TM program had the largest body of support, including research showing statistically significant reductions of psychological distress factors among inmates receiving TM instruction.¹⁰ On the basis of these initial findings, a randomized controlled

trial of prison inmates was designed to evaluate the impact of this stress reduction program on trauma symptoms and trauma-associated factors.

The current article describes the results of a randomized controlled study investigating the effects of the TM program on total trauma symptoms: anxiety, depression, dissociation, sleep disturbance subscales, and perceived stress in a population of inmates with a moderate- to high-risk criminal profile. Although research has been conducted on this intervention's application to specific types of trauma in other populations,^{11,12} this is the first known published study to evaluate the effects of the TM program on trauma symptoms in prison inmates.

METHODS

Subjects

One hundred eighty-one male inmates in the Oregon state correctional system were randomly assigned to either the TM program (*n* = 90) or a no-treatment control group (*n* = 91). Two prisons took part in this trial: Oregon State Correctional Institution and Oregon State Penitentiary. Both prisons are run by the Oregon Department of Corrections and are located in Salem, OR. Oregon State Correctional Institution is a medium-security prison housing approximately 900 men. Oregon State Penitentiary is a maximum-security prison housing about 2400 men.

To be eligible for the study, the men had to have at least four months of their prison

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sentence left to serve and have at least a moderate-risk level on the Automated Criminal Risk Score. This score is generated from an algorithm that uses seven risk factors: age, earned time, sentence length, revocation, number of prior incarcerations, prior theft convictions, and type of crime (person, property, or statutory).

Procedures

Transcendental Meditation Program

The treatment group was taught the TM technique in a standard 7-step course (during 5 sessions lasting approximately 1 hour per session). They were then encouraged to practice this stress reduction technique for 20 minutes twice a day, once in the morning and once in the late afternoon. Two certified TM teachers who had more than 10 years of teaching experience were the instructors for this study. The same standardized TM course sequence was used for all study participants; this sequence is described fully in the literature.¹³

The TM technique is a simple, natural, effortless technique that allows the mind to experience finer levels of the thinking process until the mind transcends and experiences the least excited state of human awareness.¹³ Overall, TM produces a profound state of “restful alertness.”¹⁴ Participants in the TM group also had the option to attend group follow-up training and meditation sessions several times a week during the four-month intervention.

No-Treatment Controls

Subjects in the control group continued with their daily schedule and did not participate in the TM program. All subjects in both groups continued to receive their usual care.

Outcome Measures

The following measures were administered at baseline and four-month post-testing. Written informed consent was received from all subjects before testing.

Trauma Symptom Checklist

The Trauma Symptom Checklist (TSC) assesses trauma-related problems in several categories,¹⁵ with the source of the trauma being psychological and/or physical. A modified TSC inventory was used in this study, which included 30 of the original

Table 1. Background and demographic characteristics by group for entire sample^a

Variable	Transcendental Meditation (n = 90)	Control (n = 91)	p value
Age, years	28.56 ± 7.18	29.95 ± 8.22	NS
Race/ethnicity, no. (%)			
White	47 (52)	48 (53)	NS
Hispanic	8 (9)	4 (4)	
African American	17 (19)	12 (13)	
Native American	14 (16)	14 (15)	
Other	4 (4)	13 (14)	
ACRS	0.33 ± 0.15	0.31 ± 0.16	
Perceived Stress Scale	29.84 ± 6.81	31.32 ± 6.96	
Trauma Symptom Checklist			
Total trauma	23.68 ± 13.11	30.12 ± 16.10	0.004
Anxiety subscale	2.99 ± 3.30	6.02 ± 4.27	0.001
Dissociation subscale	3.39 ± 2.34	4.31 ± 2.70	0.015
Depression subscale	6.07 ± 3.67	7.68 ± 4.04	0.005
Sleep disturbance subscale	7.72 ± 4.55	8.62 ± 4.62	NS

^a Data are presented as baseline mean ± standard deviation unless indicated otherwise. ACRS = automated criminal risk score; NS = not significant.

Table 2. Four-month adjusted posttest scores for trauma-associated symptoms^a

Variable	Transcendental Meditation (n = 73)	Control (n = 71)	p value	d
Perceived Stress Scale	21.37 ± 0.70	26.41 ± 0.76	< 0.001	0.75
Trauma Symptom Checklist				
Total trauma	12.50 ± 1.03	20.02 ± 1.75	< 0.001	0.57
Anxiety subscale	2.08 ± 0.23	3.61 ± 0.42	< 0.001	0.50
Dissociation subscale	1.80 ± 0.18	3.02 ± 0.29	< 0.001	0.56
Depression subscale	3.25 ± 0.52	5.21 ± 0.32	< 0.001	0.50
Sleep disturbance subscale	3.62 ± 0.39	6.22 ± 0.51	< 0.001	0.63

^a Data are presented as adjusted posttest mean ± standard error. d = effect size based on Cohen’s d.

Table 3. Background and demographic characteristics for the high-trauma symptoms subgroup (baseline total trauma score ≥ 26)^a

Variable	Transcendental Meditation (n = 41)	Control (n = 53)	p value
Age, years	29.90 ± 7.06	30.21 ± 8.29	NS
ACRS	0.36 ± 0.13	0.34 ± 0.16	NS
Perceived Stress Scale	34.59 ± 5.18	34.64 ± 5.74	NS
Trauma Symptom Checklist			
Total trauma	35.27 ± 9.15	41.00 ± 11.70	0.011
Anxiety subscale	6.56 ± 2.97	8.47 ± 3.67	0.008
Dissociation subscale	5.00 ± 2.19	5.83 ± 2.40	NS
Depression subscale	8.90 ± 3.02	10.13 ± 3.12	NS
Sleep disturbance subscale	11.02 ± 3.52	11.42 ± 3.70	NS

^a Data are presented as baseline mean ± standard deviation. ACRS = automated criminal risk score; NS = not significant.

test items to give a total score and scores on the following subscales: dissociation, depression, anxiety, and sleep problems.¹⁵ Each symptom item was rated according

to its frequency of occurrence, using a 4-point scale ranging from “0 = never” to “3 = often.” The TSC addresses broad trauma-related symptoms and has strong

Table 4. Four-month adjusted posttest scores for trauma-associated symptoms in the high-trauma subgroup (baseline total trauma score ≥ 26)

Variable	Transcendental Meditation (n = 32), mean \pm SE	Control (n = 41), mean \pm SE	p value	d
Perceived Stress Scale	21.89 \pm 1.21	28.44 \pm 1.02	< 0.001	0.89
Trauma Symptom Checklist				
Total trauma	15.63 \pm 1.52	26.58 \pm 2.47	< 0.001	0.74
Dissociation subscale	2.15 \pm 0.28	4.11 \pm 0.40	< 0.001	0.79
Depression subscale	3.86 \pm 0.46	7.10 \pm 0.69	< 0.001	0.78
Anxiety subscale	2.57 \pm 0.36	4.96 \pm 0.61	< 0.001	0.67
Sleep problems subscale	4.53 \pm 0.67	8.00 \pm 0.71	< 0.001	0.75

d = effect size based on Cohen's d; SE = standard error.

psychometric properties.¹⁶ The TSC has been found to reliably index trauma sequelae.¹⁷ The modified TSC used in this study produced a Cronbach $\alpha = 0.93$.

Perceived Stress Scale

The Perceived Stress Scale is a 10-item inventory with a total score designed to assess the self-perception of stress.¹⁸

Responses are based on the previous 4 weeks, using a 5-item response set, ranging from "Never" to "Very often." The level of perceived stress measured by the Perceived Stress Scale has been found to be sensitive to meditation intervention.¹⁹ Cronbach α for the Perceived Stress Scale is reported to be 0.85.¹⁸

Statistical Analysis

Analysis of covariance, adjusting for baseline dependent scores, was used for all analyses. Effect sizes, based on Cohen's d, were calculated using mean change score group differences/posttest pooled standard deviation. In addition, subgroup analyses were conducted using high-trauma subjects (equal to or greater than the mean baseline total trauma score for the combined groups). Completer analysis was conducted for all subjects who were posttested, regardless of level of treatment compliance. Alpha was set at 0.05, two-tailed.

RESULTS

Table 1 shows the subjects' demographic and background characteristics by group for the entire sample. The mean age of the men participating in the study was 29 years. Approximately 52% were white, 16% were African American, and 15% were Native American.

Figure 1 shows the CONSORT flow diagram for all subjects. A total of 144 subjects (TM: n = 73; Control: n = 71) completed both baseline and 4-month posttesting. Table 2 shows mean changes on the total trauma scale, trauma subscales, and Perceived Stress Scale. Significant reductions in total trauma ($F[1, 141] = 19.73, p < 0.001$), as well as the dissociation ($F[1, 141] = 18.21, p < 0.001$), depression ($F[1, 141] = 13.32, p < 0.001$), anxiety ($F[1, 141] = 14.23, p < 0.001$), and sleep disturbance subscales ($F[1, 141] = 21.61, p < 0.001$) on the TSC, and perceived stress ($F(1, 140) = 27.09, p < 0.001$) were observed in the TM group compared with controls. Effect sizes were mostly in the moderate to large range, with depression and anxiety subscales = 0.50 and the Perceived Stress Scale = 0.75.

Seventy-nine of the 90 men (88%) randomly assigned to the TM group completed the initial TM course. During the course of the study, 80% of the men (72) were compliant with TM practice (defined as at least once a day), with 68% (62) practicing twice a day on average.

Table 3 shows the demographic and baseline data for the high-trauma symptoms subgroup (TM: n = 32; control: n = 41).

Table 4 shows changes on the total trauma scale, trauma subscales, and

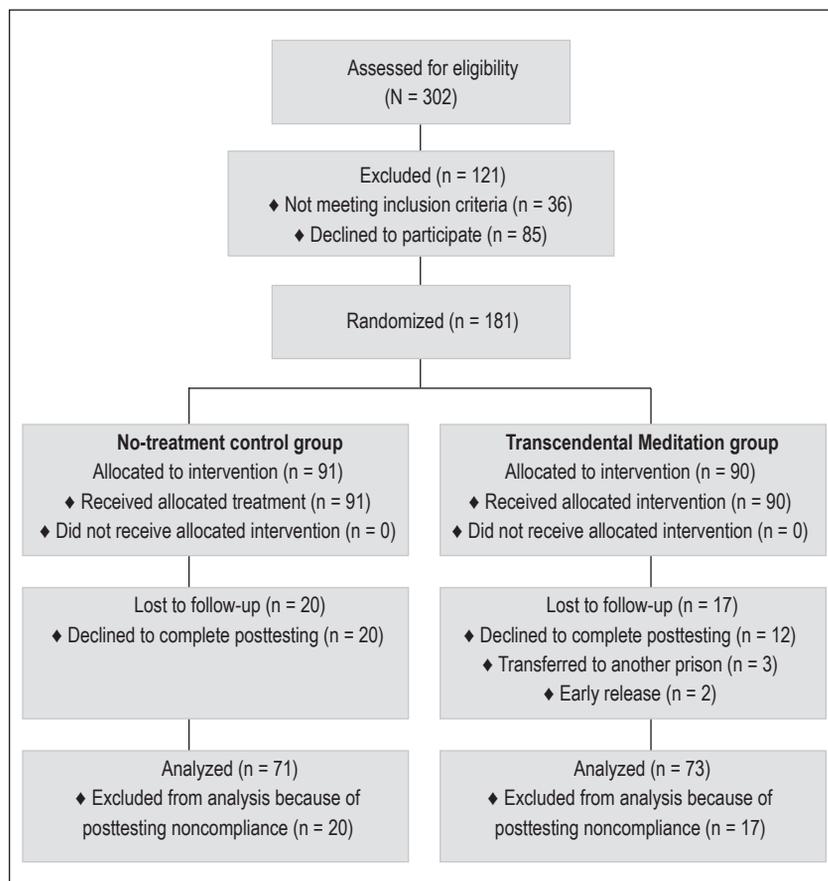


Figure 1. CONSORT flow diagram.
CONSORT = Consolidated Standards of Reporting Trials.

the Perceived Stress Scale for the high-trauma symptoms subgroup. Significant reductions in total trauma score ($F[1, 70] = 14.20, p < 0.001$); the dissociation ($F[1, 70] = 17.60, p < 0.001$), depression ($F[1, 70] = 14.29, p < 0.001$), anxiety ($F[1, 70] = 11.97, p = 0.003$), and sleep disturbance subscales ($F[1, 70] = 13.09, p = 0.001$); and the Perceived Stress Scale ($F[1, 69] = 18.60, p < 0.001$) were observed in the TM group compared with controls. Effect sizes were relatively large, ranging from 0.67 to 0.89.

DISCUSSION

In this clinical trial, the TM technique showed significant reductions in TSC total trauma symptoms; anxiety, depression, the dissociation, and sleep disturbance subscales of the TSC; and in the Perceived Stress Scale relative to a usual-care control group. Results for the high-trauma symptoms subgroup indicated that the TM program might be particularly efficacious for those with higher levels of trauma symptoms.

Trauma was the focus of the current intervention effort for three reasons. First, correctional facility residents are known to report high rates of trauma backgrounds compared with noncorrectional facility populations. Second, although previous TM research in correctional settings has shown improvement in other psychosocial stress factors, no known research to date has specifically focused on trauma as a main study outcome. Last, although a growing body of TM research suggests that this technique may be particularly beneficial for reducing trauma symptoms,^{11,12} there is a need for larger randomized controlled trials to assess the impact of the TM program on trauma symptoms and associated factors.

To our knowledge, this is the largest randomized controlled trial to date of the effects of the TM program on trauma symptoms, and the first of its kind conducted in a correctional setting. Prior studies have been conducted on veterans and international refugees in community-based settings and have found similar results in reductions in trauma symptoms because of TM practice.^{11,12} The current findings therefore build on prior gaps in the literature, extend the range of mental

health benefits previously documented on the TM program, and provide further evidence for the clinical value of providing TM in correctional facilities and other institutional settings.

Prior research indicates that regular TM practice decreases hyperarousal of the sympathetic nervous system and hypothalamic-pituitary-adrenal axis,^{20,21} providing a possible mechanism for how TM practice may reduce trauma symptoms.²² This same mechanism has been proposed for the effects of the TM program on cardiovascular disease.²³ Evidence linking trauma exposure and cardiovascular disease has been found across different populations and stressor events.²

This trial offered several methodologic strengths, including a randomized controlled design, high treatment-compliance rates, and a high-trauma symptoms subgroup.

Limitations included the use of a no-treatment control condition in the study rather than a more active control condition. There is, therefore, the possibility that at least some of the benefits associated with the TM intervention are not specific to TM. Future research with a more active control group should be used to determine the degree of unique benefits associated with TM. The long-term stability and further improvement in trauma symptoms cannot be determined because of the absence of a follow-up measurement beyond the four-month posttest assessment date. Finally, research on the TM program should be conducted on a female population of inmates to determine the generalizability of effects across genders.

Future studies of trauma symptoms in prison populations should focus specifically on inmates with documented post-traumatic stress disorder and should take into account other psychiatric disorders that may be present, as well as standard psychotherapy and drug treatments being administered. Future research also should assess the relationship of trauma symptoms to functional impairment and other quality of life issues.

CONCLUSION

These findings extend prior research on TM and trauma symptoms. A recent review of posttraumatic stress disorder

research indicates a need for novel, evidence-based treatments to supplement first-line therapies.²⁴ The current study findings, along with those of prior research on TM and posttraumatic stress,^{11,12} suggest that the TM program holds promise for the treatment of trauma and stress-related disorders. ❖

^a Transcendental Meditation and TM are service marks registered in the US Patent and Trademark Office, licensed to Maharishi Foundation, and used under sublicense.

Disclosure Statement

Blaze Compton, MA, is a part-time consultant to Maharishi Foundation USA Inc, Fairfield, IA. The other authors have no conflicts of interest to disclose.

Acknowledgments

The research was supported by the David Lynch Foundation, New York, NY. We wish to thank Matt Dixon for his participation in the project.

Kathleen Loudon, ELS, of Loudon Health Communications provided editorial assistance.

Authors' Contributions

Sanford Nidich, EdD, and Randi Nidich, EdD, participated in the study design, analysis of data, and drafting and critical review of the final manuscript. Tom O'Connor, PhD, participated in the study design, collection of data, and drafting and critical review of the final manuscript. Angela Seng participated in the statistical analysis and drafting of the manuscript. Blaze Compton, MA, participated in the delivery of Transcendental Meditation treatment. Thomas Rutledge, PhD, participated in drafting of the manuscript and critical review. Jeff Duncan participated in data acquisition and critical review of the manuscript. All authors have given final approval to the manuscript.

How to Cite this Article

Nidich S, O'Connor T, Rutledge T, et al. Reduced trauma symptoms and perceived stress in male prison inmates through the Transcendental Meditation program: A randomized controlled trial. *Perm J* 2016 Fall;20(4):16-007. DOI: <http://dx.doi.org/10.7812/TPP/16-007>.

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Means

Meditation is not a means to an end. It is both the means and the end.

— Jiddhu Krishnamurti, 1895-1986, Indian theosophist, public speaker, and author