



Tension Releasing Exercises Reduce Perceived Stress in College Students

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INTRODUCTION

Stress

- 53% of people report psychological or physical health problems due to stress (APA, 2012)
- 3 in 4 college students report that schoolwork and grades are stressors (Financial Worries, 2009)
- If unmanaged, stress can lead to increased susceptibility to mood disorders, coronary heart disease or other physical diseases, and chronic activation of the **sympathetic nervous system** (Goldstein & Kopin, 2007; Selye, 1974)
- **Stress cannot be eliminated, it must be managed**

Literature

- Six week study with 14 medical students demonstrated that two hours of weekly yoga decreased stress levels (Simard & Henry, 2009)
- Six week study with 128 college students demonstrated that a mind-body intervention focusing on relaxation response exercises reduced stress and anxiety (Deckro et al., 2002)
- Two week study with 61 college students demonstrated that three 30 minute, instructor led, **Tension Releasing Exercise** sessions per week improved anxiety levels (Berceli, 2009)

What are Tension Releasing Exercises (TRE)?

- Exercises to help the body activate muscular vibration and initiate the natural **relaxation response of the parasympathetic nervous system** (Berceli, 2013)
- Same mechanism the body uses after stressful events when the nervous system causes the body to shake out muscle tension patterns (Berceli, 2009)
- Benefits include less stress and anxiety, improved sleep, and increased energy (Berceli, 2013)
- Used with thousands of people throughout the world but **limited scientific literature is available** (Berceli, 2013)

Purpose

The purpose of this study was to determine if the implementation of a TRE intervention would have an effect on perceived stress in college students

Hypotheses

H1: The TRE intervention would reduce the amount of perceived stress of the experimental group

H2: The experimental group would show a greater reduction in stress than the control group

METHODS

Sampling Method

- Recruited students over the age of 18 from a variety of classes at Fort Lewis College
- Experimental Group n=9, final n=5 (4 dropped out)
- Control Group n=30

5 Week Study Design

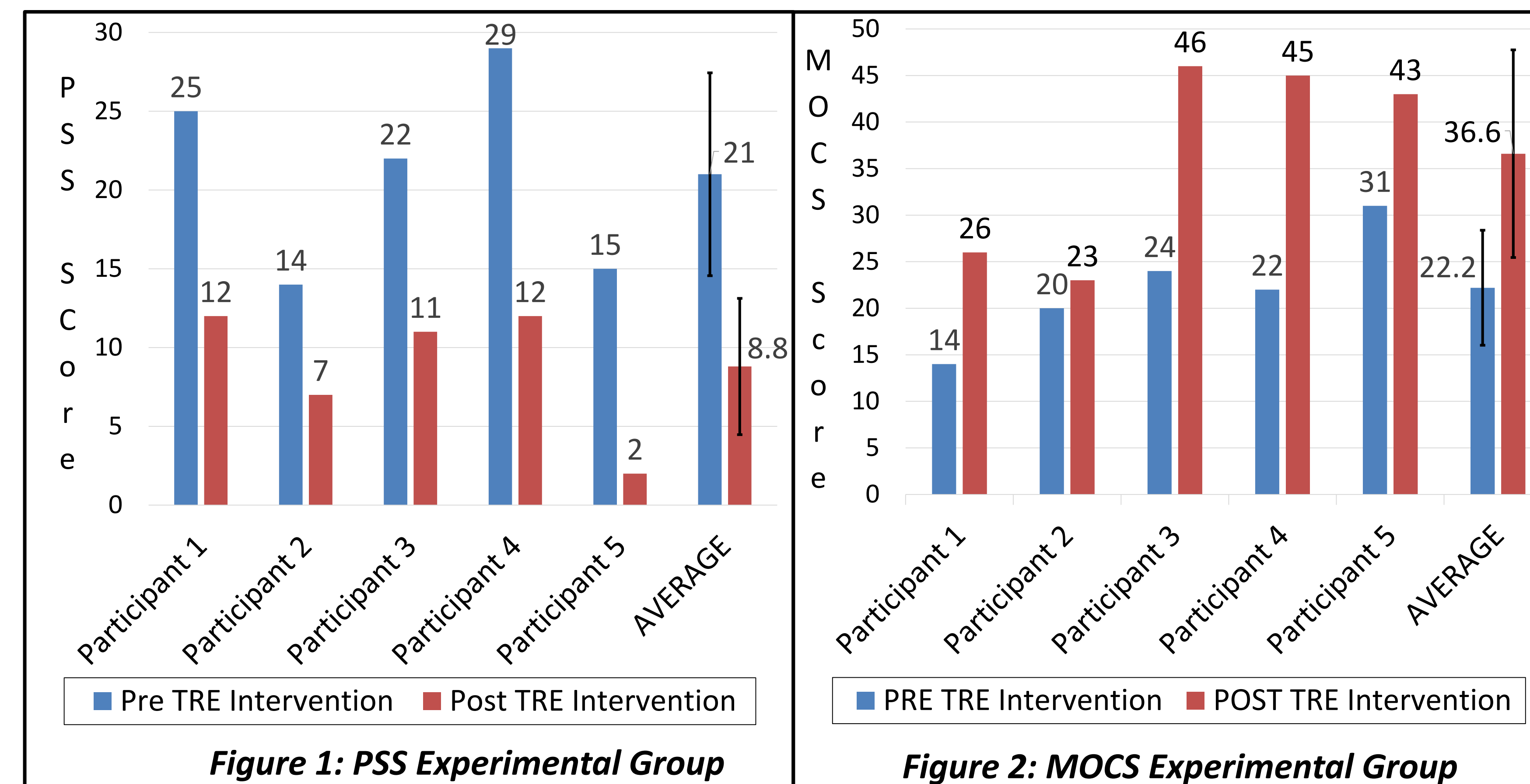
- 1) Participants completed pre-study stress questionnaires
 - Perceived Stress Scale (PSS)
 - 10 Questions on a 0-4 Likert scale
 - Measure of Current Status Part A (MOCS)
 - 13 Questions on a 0-4 Likert scale
- 2) Experimental Group
 - Taught TRE from a certified level II TRE instructor and given a booklet showing the exercises
 - Performed TRE on their own three times per week and filled out a log sheet
- Control Group
 - Asked not to begin a NEW stress management technique
- 3) Participants completed post-study PSS and MOCS questionnaires

Quantitative Data Analysis

- **H1:** Dependent t tests
 - To determine if the experimental group showed a reduction in perceived stress from Pre to Post
- **H2:** Independent t tests, Mann Whitney U tests
 - To determine if the experimental group showed a greater reduction in perceived stress than the control group

RESULTS

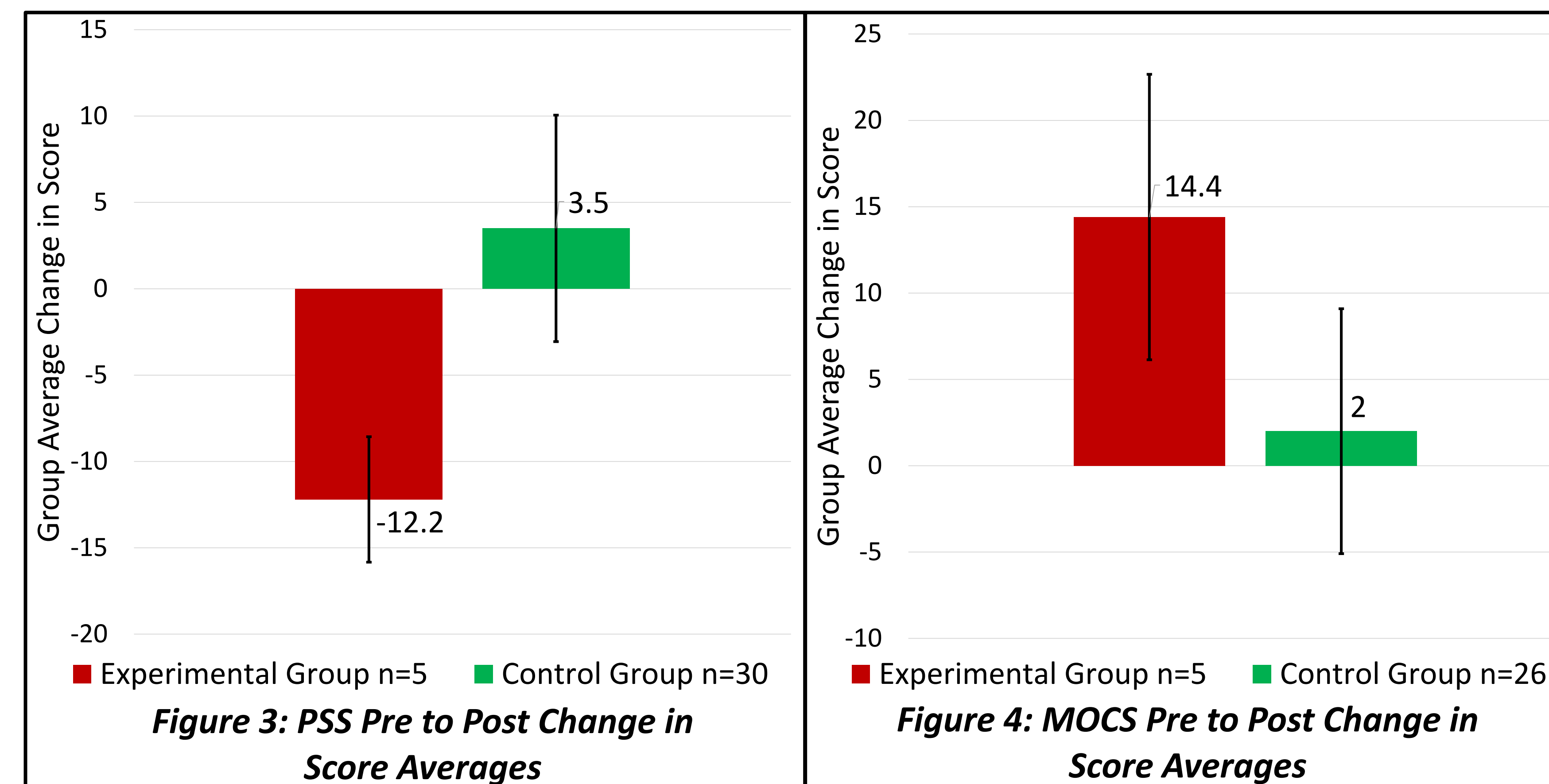
Participants reported performing TRE an **average of 3.032 times per week** (standard deviation 1.11) and an average of **65.54 minutes per week** (standard deviation 15.47)



Figures 1 and 2 show the pre and post PSS and MOCS scores for each of the participants in the experimental group. The figures also show the group averages. The scores are acquired from totaling the value for each question in the questionnaire.

Figure 1 shows the PSS scores. A **lower score** on the PSS represents **less perceived stress**. The dependent t test determined the pre-post PSS scores were significant at $p = .002$

Figure 2 shows the MOCS scores. A **higher score** on the MOCS represents **less perceived stress**. The dependent t test determined the pre-post MOCS scores were significant at $p = .018$



Figures 3 and 4 show the experimental and control groups' average changes in score from pre to post. These values were acquired by subtracting the post total score from the pre total score for each participant and finding the average for each group.

Figure 3 shows the PSS change in scores. A **negative number** represents a **decrease in perceived stress**. The independent t test determined the change in PSS scores between the control and experimental group was significant at $p = .000011$. The Mann Whitney U test confirmed this significance at $p = .000481$

Figure 4 shows the MOCS change in scores. A **positive number** represents a **decrease in perceived stress**. The independent t test determined the change in MOCS scores between the control and experimental group was significant at $p = .002$. The Mann Whitney U test confirmed this significance at $p = .008$

DISCUSSION

H1: Was the hypothesis that the TRE intervention would lower the amount of perceived stress of the experimental group supported?

Yes!

H2: Was the hypothesis that the experimental group would show a greater reduction in stress than the control group supported?

Yes!

The implementation of a TRE intervention reduced the amount of perceived stress of the 5 college students in the experimental group and this reduction was greater than the control group's

TRE may be beneficial for college students as a stress management technique

Literature

This study:

- Reinforced the findings of Dr. Berceli that TRE had positive benefits in college students, reducing stress and anxiety (2009)
- Showed that participants who performed TRE on their own after an introductory session had benefits similar to Dr. Berceli's instructor led TRE sessions (2009)
- Demonstrated that TRE reduced stress on the PSS similarly to relaxation response and yoga interventions (Deckro et al. 2002; Simard & Henry, 2009)

Limitations

- Small experimental group (n=5)
- 4 subjects dropped out of the experimental group
- Control group was much larger than the experimental group (n=30)
- Data collected solely from self reporting surveys
- Hawthorn effect
- Inability to control the many variables that can affect stress levels

Recommendations

- Replicate the study with a larger experimental group and an equal size control group
- Collect biological stress data such as salivary cortisol tests to support the findings of the psychological stress data
- Collect and analyze descriptive data to determine if age, number of credit hours, or year in college affect the benefits of TRE

REFERENCES

- American Psychology Association. (2012). Stress in America: our health at risk. Retrieved February 27, 2015, from <http://www.apa.org/news/press/releases/stress/2011/final-2011.pdf>
- Berceli, D. (2009). Evaluating the effects of stress reduction exercises employing mild tremors: A pilot study [dissertation]. Arizona State University
- Berceli, D. (2013). Retrieved February 28, 2015, from <http://traumaprevention.com/>
- Deckro, G. R., Ballinger, K. M., Hoyt, M., Wilcher, M., Dusek, J., Myers, P., Greenburg, . . . Benson, H. (2002). The evaluation of a mind/body intervention to reduce psychological distress and perceived stress in college students. *Journal of American College Health*, 50(6), 281.
- Financial worries, stress, and depression on college campus. (2009, January 1). Retrieved March 28, 2015, from http://hosted.ap.org/specials/interactives/wdc/ap_mtvu_poll_0509/index.html?SITE=AP
- Goldstein, D. S., & Kopin, I. J. (2007). Evolution of concepts of stress. *Stress: The International Journal on the Biology of Stress*, 10(2), 109-120.
- Selye, H. (1974). *Stress without distress*. Philadelphia and New York: Lippincott.
- Simard, A., & Henry, M. (2009). Impact of a short yoga intervention on medical students' health: A pilot study. *Medical Teacher*, 31(10), 950-952.

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