



The Acute Impact of Relaxation Techniques on Student Psychological and Physiological Health

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Background

- ❖ The Accreditation Council for Pharmacy Education¹ mandated measurement of perceived stress in Student Pharmacists, specifically potential negative impacts on learning experiences and morale.
- ❖ Relaxation techniques have been shown to increase:
 - Stress relief and relaxation²
 - Emotional regulation and attention²
 - Self esteem and optimism^{3,4}
- ❖ This study investigates the acute impact of relaxation techniques on student psychological and physiological well-being.

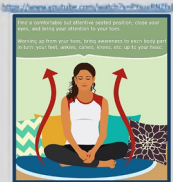
Objectives

- ❖ **Primary outcomes:** To compare changes from pre- to post-treatment measures (perceived stress, anxiety, and evaluation of techniques) between intervention (relaxation) and control (non-relaxation) techniques.
- ❖ **Secondary outcomes:** To compare the effect of each treatment on these measures.

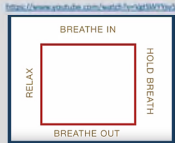
Methods

- ❖ **Population:**
 - 86 Student Pharmacists (51 females and 35 males) were recruited from P1, P2, and P3 years from the SWOSU College of Pharmacy. Demographic analysis revealed gender was not a significant factor ($P > 0.05$) in research outcomes.
- ❖ **Treatments used to measure primary and secondary outcomes:**
 - **Three relaxation interventions (n = 48)**
 - **Body Scan Meditation (n = 16)** – Systematically relaxing muscles
 - **Mindfulness Meditation (n = 16)** – Focusing on the sound of a bell
 - **4 x 4 Meditation (n = 16)** – Counting breaths
 - **Two non-relaxation controls (n = 38):**
 - **Power Posing (n = 19)** – Holding an open pose
 - **Mental Stimulation (n = 19)** – Playing Word Streak App

Body Scan Meditation



4x4 Meditation



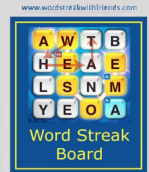
Mindfulness Meditation



Power Posing⁵



Mental Stimulation



Methods

❖ Protocol:

- Pre**
 - Survey perceived stress, anxiety, & technique opinions
 - Collect saliva sample
- Treat**
 - Conduct Relaxation or Non-Relaxation Technique (8 to 10 min)
 - Record physiological measures (HR, RR, tension, temperature)
- Post**
 - Survey perceived stress, anxiety, & technique opinions
 - Collect saliva sample

❖ Analysis:

- Survey data were analyzed utilizing descriptive statistics, dependent t-tests for overall pre- to post-treatment comparisons, and MANOVA for primary and secondary outcome analysis using pre-treatment responses as covariates (IBM SPSS Advanced Statistics, version 21).
- Time did not permit analysis of salivary samples for cortisol and alpha-amylase or changes in physiological measures.
- We expect relaxation techniques to lower post-treatment stress and anxiety levels more than controls. Accordingly, we expect subjects will have improved perceptions toward conducting relaxation techniques.

Results

❖ Descriptive Statistics:

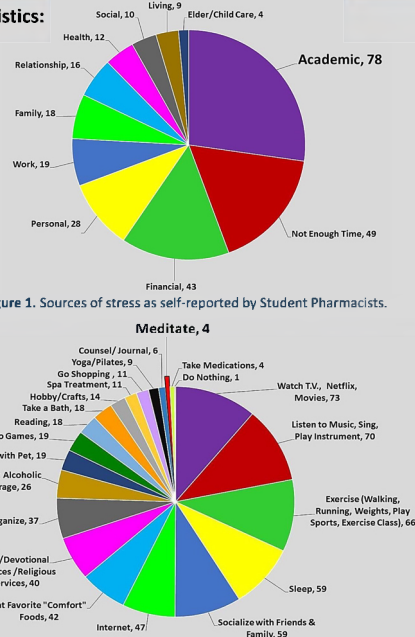


Figure 1. Sources of stress as self-reported by Student Pharmacists.

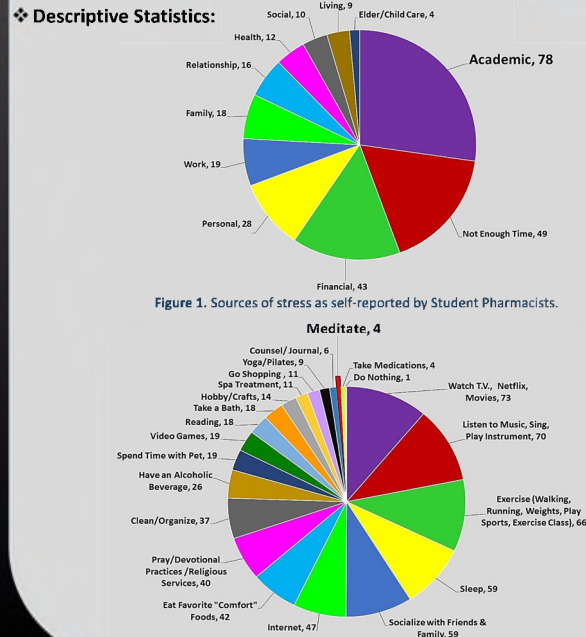


Figure 2. Current methods to reduce stress as self-reported by Student Pharmacists.

Results

❖ Dependent t-tests:

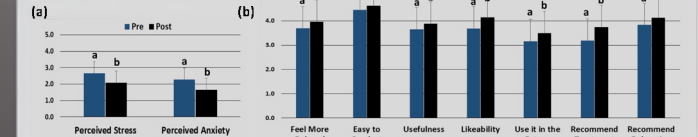


Figure 3. Changes across treatments in Student Pharmacist (a) Perceived stress and anxiety levels, with 1 = No Stress or Anxiety and 5 = Severe Stress or Anxiety, and (b) Overall opinions about techniques, with 1 = Strongly Disagree to 5 = Strongly Agree ([†] $P < 0.05$)

- ❖ **Primary outcomes:** No post-treatment measures were found to be significant ($P > 0.05$) between the relaxation and non-relaxation treatments.

❖ Secondary outcomes:

Table 1. Comparison of Post-Treatment Mean Ratings for Survey Responses.^a

Survey Variable	Body Scan	Mindfulness	4 x 4	Power Posing	Mental Stim.
Perceived Stress ^b	2.1 ± 0.62	1.8 ± 0.66	2.3 ± 0.45	1.9 ± 0.71	2.3 ± 0.82
Perceived Anxiety ^b	1.6 ± 0.63 ^{**}	1.5 ± 0.73	1.8 ± 0.68 ^{**}	1.5 ± 0.61 ^{**}	2.0 ± 0.88 [*]
Feel More Relaxed ^c	4.1 ± 0.93 ^{**}	4.4 ± 0.81 ^{**}	3.9 ± 1.34 [*]	4.1 ± 1.08 ^{**}	3.4 ± 1.04 [*]
Easy to Conduct ^c	4.7 ± 1.01 ^{**}	4.9 ± 0.25 ^{**}	4.3 ± 1.18 [*]	4.6 ± 1.02 ^{**}	4.7 ± 0.59 [†]
Usefulness ^c	3.9 ± 1.00	4.1 ± 0.68 [*]	3.8 ± 1.13 [*]	3.9 ± 1.08	3.8 ± 1.00
Likeability ^c	4.3 ± 1.00 ^{**}	4.1 ± 1.00 ^{**}	3.9 ± 1.20 [*]	4.2 ± 1.03 ^{**}	4.2 ± 1.11
Use it in the Future ^c	3.3 ± 1.13	3.2 ± 1.22	3.6 ± 1.09	3.5 ± 0.77	3.8 ± 1.34
Recommend Treatment ^c	3.6 ± 0.72	3.6 ± 1.09	4.2 ± 0.75	3.5 ± 0.84	3.8 ± 0.92
Recommend Relaxation ^c	4.1 ± 1.02	4.4 ± 0.81	4.1 ± 0.85	3.7 ± 1.20	4.4 ± 0.78

^a Subjects scored responses from 1 – 5, with 1 = Strongly Disagree and 5 = Strongly Agree to the survey statement regarding their treatment.

^b n = 16, 16, 16, 19, and 19, for treatments, respectively.

^c n = 16, 16, 16, 19, and 18, for treatments, respectively.

^{**} $P < 0.05$

Conclusions

- ❖ Student Pharmacists reported academics as the primary cause of stress, and very few reported using meditation to reduce stress prior to this study.
- ❖ When comparing individual treatments, two relaxation techniques (Mindfulness and Body Scan Meditation) and one control (Power Posing) were rated by Student Pharmacists as easiest to conduct, most liked, and most likely to cause relaxation.
- ❖ Although we found no significant differences when comparing individual treatments for future use or recommendation of these techniques, statistical evidence suggests Student Pharmacists had beneficial changes overall in stress, anxiety, and opinions regarding relaxation techniques.
- ❖ Future research will evaluate how relaxation impacts physiological measures.

References

- ¹Accreditation Council for Pharmacy Education (2013). Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree 2.0. Chicago, IL: ACPE (Guideline 15.5; page 30).
- ²Rubia, K. 2009. The neurobiology of meditation and its clinical effectiveness in psychiatric disorders. Biological Psychology. 82(1): 1-11.
- ³Brown, K. W., and R. M. Ryan. 2003. The benefits of being present: The role of mindfulness in psychological well-being. Journal of Personality and Social Psychology. 84: 822-848.
- ⁴Rasmussen, M.K., and A. M. Pidgeon. 2011. The direct and indirect benefits of dispositional mindfulness on self-esteem and social anxiety. Anxiety, Stress and Coping. 24(2): 227-233.
- ⁵Carney, D.R., A. J. C. Cuddy, and A. J. Yap. 2010. Power posing: Brief nonverbal displays affect neuroendocrine levels and risk tolerance. Psychological Science. 21 (10): 1363-1368. doi: 10.1177/0956797610383437.