A Pilot of the HeartMath stress reduction technique by medical students

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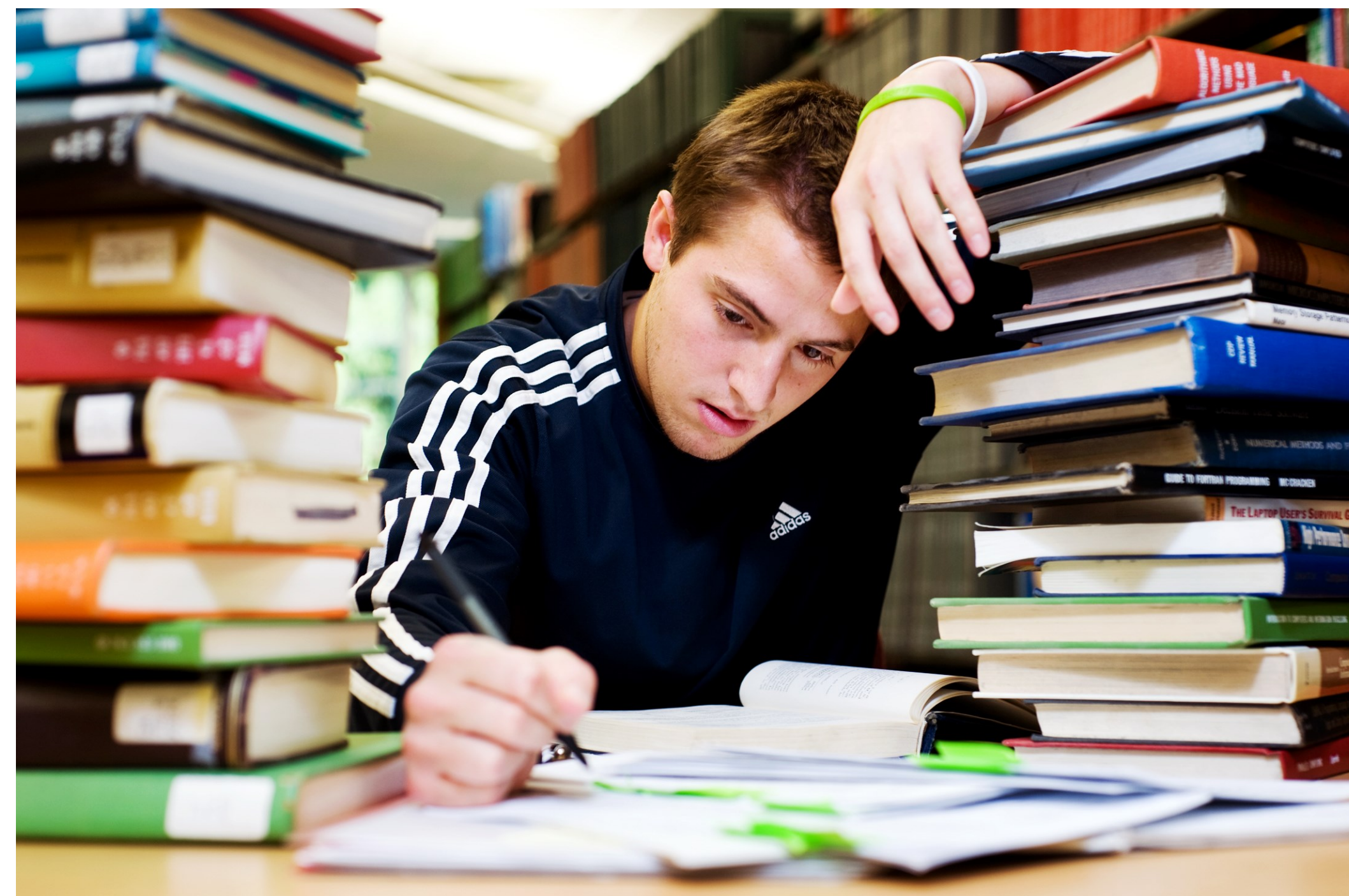
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Background

Medical student stress in the literature:

- One review of 40 studies suggested a high prevalence of depression and anxiety in medical students and consistently higher levels of overall psychological distress compared to the population[1].

- Medical school emotional distress is chronic and persistent as depression scores rose over time and remained elevated[2].

- A survey of medical students found that 60% of students reported depressive symptoms[3].

- A review of articles concluded medical students "experience substantial distress," and there is a need for research on how to foster student well-being[4].
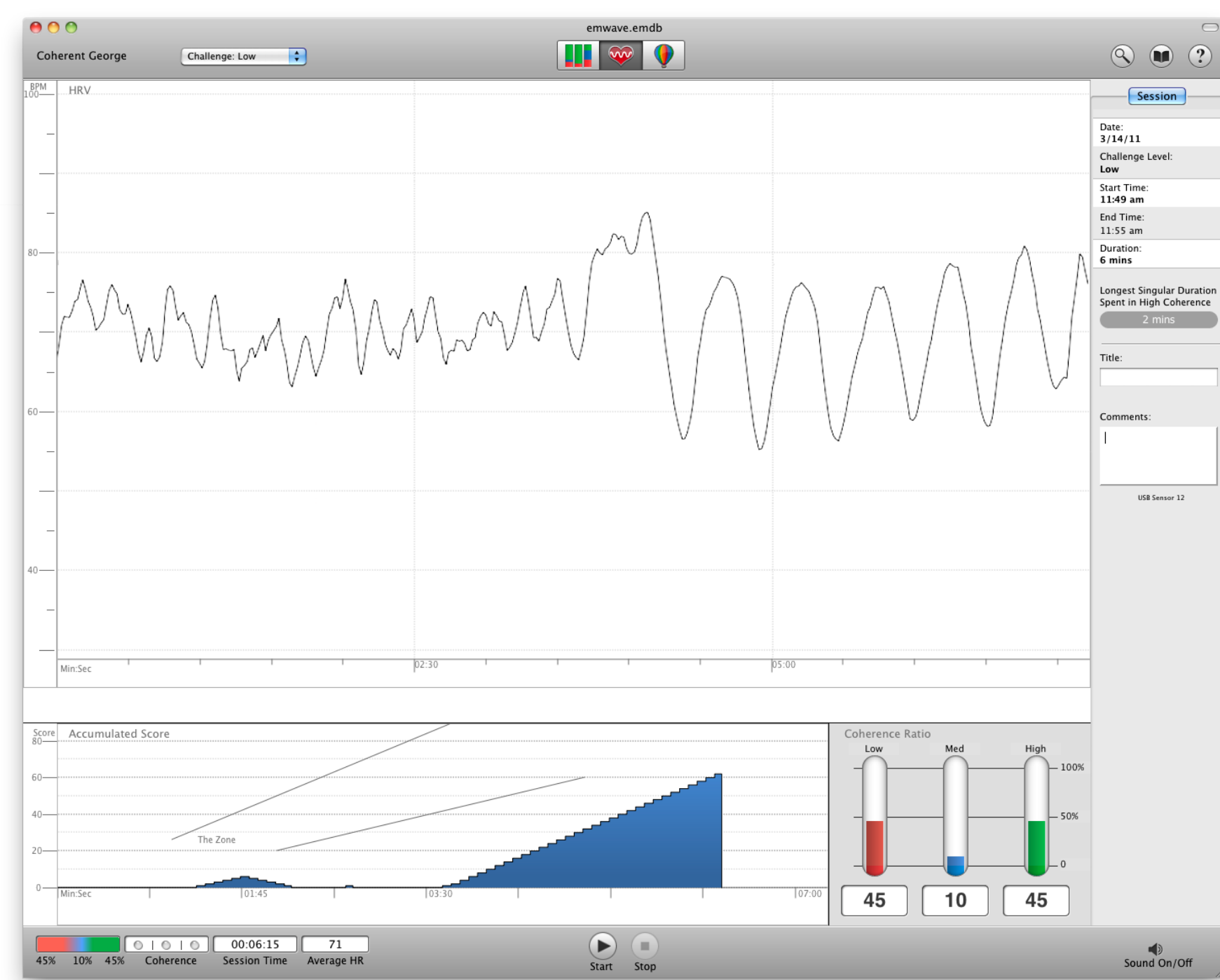
Basic science of HeartMath:

- HeartMath records Heart Rate Variability (HRV) as a measure of ANS activity balance which indicates physiological, mental and behavioral resiliency.

Purpose:

- To determine if students who used the HeartMath training will have lower levels of stress, depression and anxiety as demonstrated by lower scores on the Perceived Stress Scale (PSS), PHQ-9 and STAI-6, as well as, an improved HRV compared to those students who did not use the technique.

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Methods

- IRB approval was obtained.

- Recruitment: Second year medical students acting as TAs for the summer were given the opportunity to participate. Of 24 total TAs 18 chose to participate and were randomly assigned into 2 evenly distributed groups.

- Pre intervention assessment tools: a demographic survey, the 14-item PSS, STAI-6, PHQ-9 and the PC-based HeartMath recording system were utilized to obtain baseline measurements.

- Intervention Group: The subjects received 1 hour of HeartMath training and a Personal Stress reliever (PSR) to use for a minimum of once daily 5 minute sessions throughout the study. An activity log was designed and given to this group to track HeartMath usage.
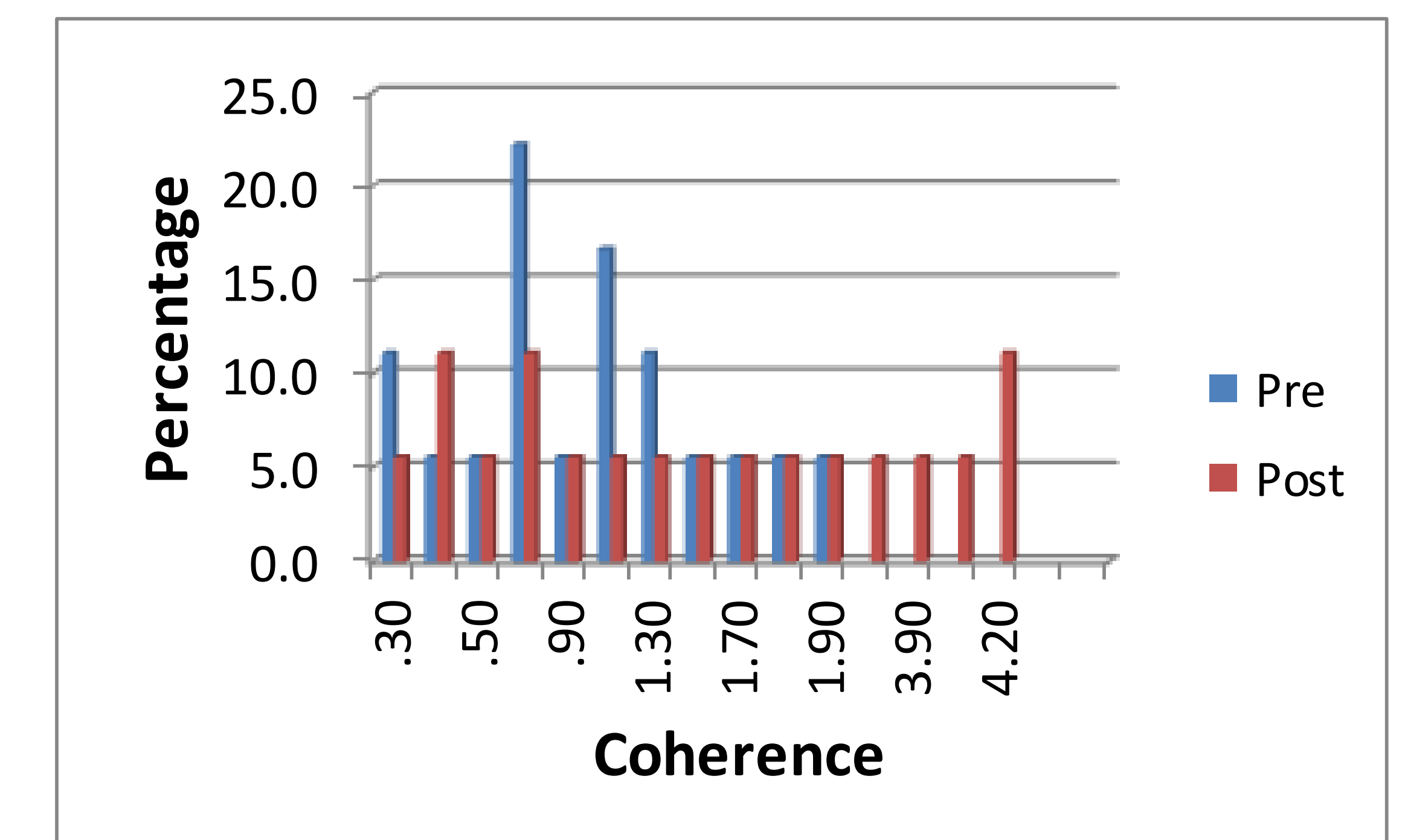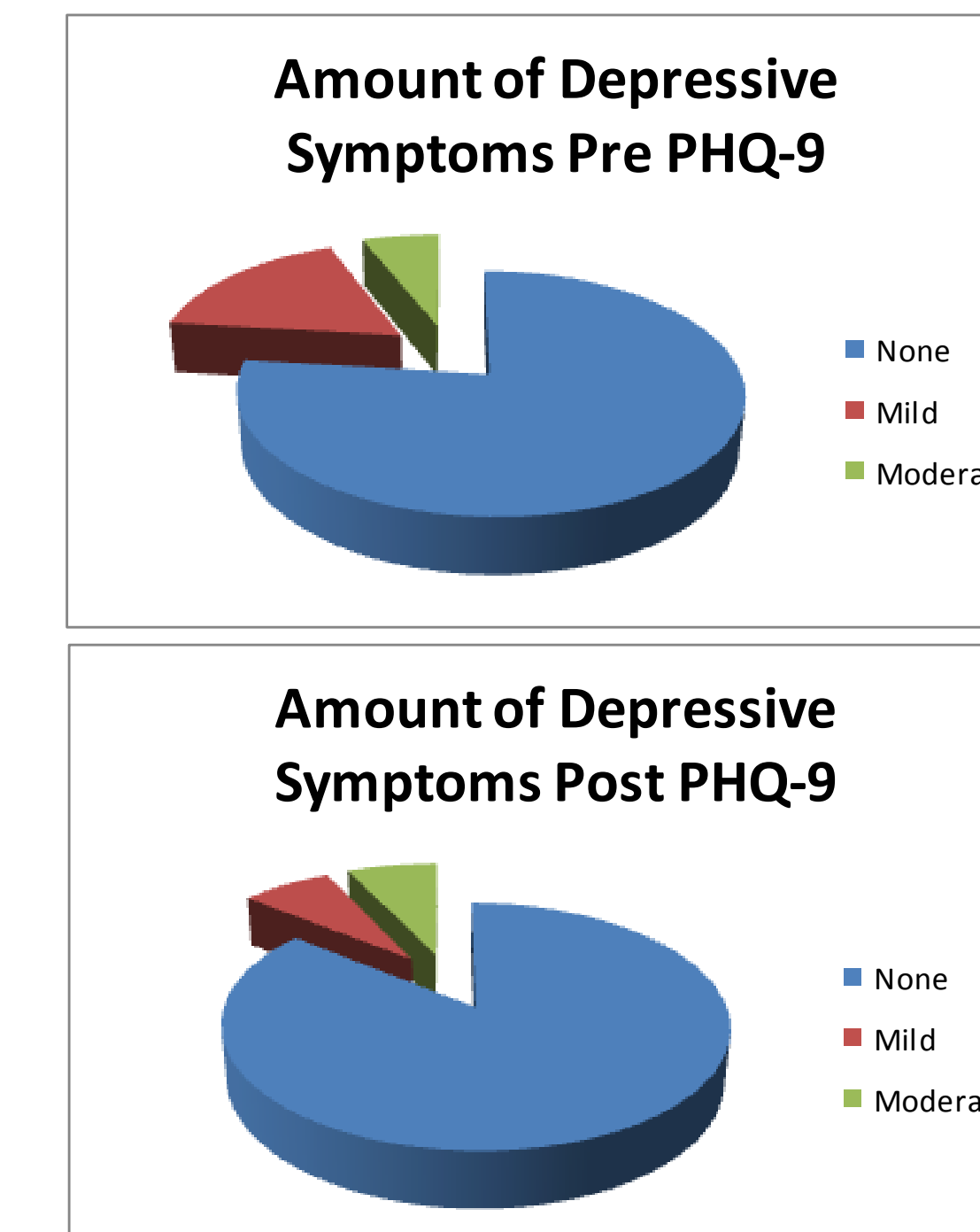
- Control Group: The subjects were told to continue to use whatever stress management methods they currently practice and to log what those activities are, how long they lasted and when they occurred along with a 0-10 rating of the subject's stress level post-activity.

- Post intervention assessment tools: the 14-item PSS, STAI-6, and PHQ-9 were re-administered. The PC-based HeartMath recording system was utilized to obtain HRV, coherence, achievement and average HR measures.

- Data Analysis: Data from each patient was transferred from an online data collection tool or PC-Based HeartMath onto an excel spreadsheet and analyzed using Excel and SPSS.

Results

Amount of Depressive Symptoms Pre PHQ-9

Amount of Depressive Symptoms Post PHQ-9

No significant difference:

- In Heart Rate Variability between control and HeartMath groups, based on coherence measures, average HR, or achievement.

- In self reported stress, anxiety or depression.

- Between genders

Discussion

The results were not indicative of a significant difference in stress, anxiety, depression or Heart Rate Variability. We have learned several ways to improve another study in the future to better analyze the effects of HeartMath technology's benefits.

For example:

- use HeartMath for more than the minimum recommended 5 minutes.

- change the stress level after activity scales to include stress level before and after to give a better reflection of the impact the activity had on the subject's stress.

- Increase the amount of HeartMath training for the intervention group from 1 hour to the usual 4-6 hours.

- **References:**
  1. Dyrbye, L., Thomas, M., & Shanafelt, T. (n.d.). Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students.. *PubMed*. **2.** Rosal, M., Ockene, I., Ockene, J., Barrett, S., Ma, Y., & Hebert, J. (n.d.). A longitudinal study of students' depression at one medical school.. *PubMed*. **3.** Chang, E., Eddins-Folensbee, F., & Coverdale, J. (n.d.). Survey of the prevalence of burnout, stress, depression, and the use of supports by medical students at one school.. *PubMed*. **4.** Dyrbye, L. N., Thomas, M. R., & Shanafelt, T. D. (n.d.). Medical Student Distress: Causes, Consequences, and Proposed Solutions. *Science Direct*.