

Just Breathe: The Efficacy of Paced Breathing to Decrease College Students' Anxiety

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Introduction

Anxiety is one of the most common concerns amongst college students.

For some, anxiety can be influential on learning, while for others, it can lead to poor performance, reduced memory storage, and reduced processing capacity for working memory.

There are various treatments for anxiety, including pharmacological therapy, psychotherapy, or a combination of the two. Although researchers demonstrate that both are somewhat useful, limitations exist.

Purpose

This study investigated the effectiveness of a two-week Heart Rate Variability Biofeedback Training (HRV-BT) and paced breathing intervention to reduce college students' anxiety symptoms.

Assessment measures included a state-anxiety (S-A) inventory and Heart Rate Variability (HRV)—psychophysiology measure.

Hypothesis:

The paced breathing group will demonstrate a significant improvement in S-A symptoms after the two-week intervention compared to the control group.

Discussion

S-Anxiety:

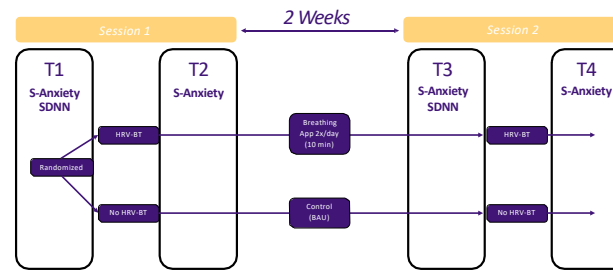
We found a significant short-term decrease during Session-1 and Session-2 for the paced breathing group; however, we found no long-term reductions.

The control group participants did not show significant change over time.

SDNN:

We found no significant differences between the paced breathing group and the control group.

Design



Results

Significant difference in mean S-A between intervention groups, $F(1, 32) = 4.07, p = .05$

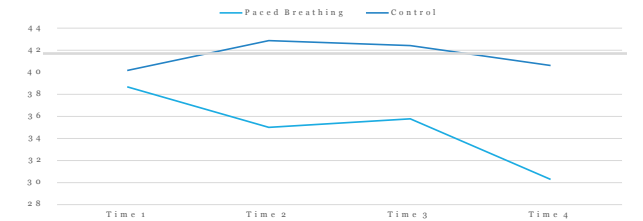
Significant group by time interaction for S-A, $F(3, 96) = 5.613, p = .001$

Significant effect of time on S-A for the paced breathing group, $F(3, 48) = 8.77, p < .001$, but not for the control group, $F(3, 48) = 1.28, p = .29$

Not significant difference in mean SDNN between intervention groups, $F(1, 33) = 0.67, p = .42$

No significant group by time interaction for SDNN, $F(1, 33) = 0.06, p = .80$

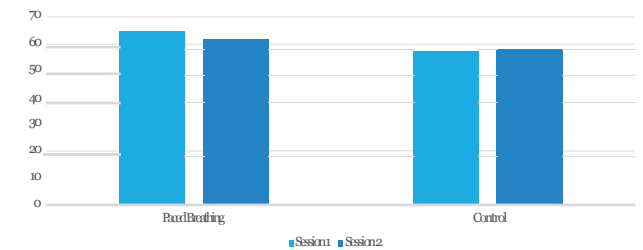
S-Anxiety



Time		Paced breathing		Control	
Time	Time	Mean Difference	Cohen's d	Mean Difference	Cohen's d
1	2	3.71*	0.34	-1.71	0.24
	3	2.94	0.25	-2.06	0.20
2	4	4.71	0.47	1.53	0.20
3	4	5.47*	0.49	-.65	0.16

* $p < 0.5$

HRV (SDNN)



Logistic parameter	Paced breathing		Control		t(33)	p	Cohen's d
	M	SD	M	SD			
SDNN Session-1	64.83	26.07	57.19	23.08	-0.92	0.48	-0.31
SDNN Session-2	61.51	20.83	58.10	27.16	-0.42	0.43	-0.14

Conclusion

We found self-reported, short-term S-A scores decreased when practicing HRV-BT significantly. Long-term effects were not statistically significant.

The physiological measure of HRV, using SDNN, did not significantly improve over time when examined between and within groups.

Future studies should examine short-term differences in SDNN during sessions. Furthermore, using an at-home HRV-BT program may provide more significant results.