A Cyberphysiologic Technique for Stress Control Through a YouTube Video Channel Useable Anytime, Anywhere

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Abstract

Background: This research aimed to empower individuals to take charge of their daily stress. Unlike traditional stress relaxation sessions, which often involve prolonged in-person sessions over multiple appointments, the cyberphysiologic protocol of this research addressed challenges associated with coaching availability, client-coach interaction, and communication of healing objectives, often sources of uncertainty and ambiguity for the clients. While Cyberphysiology on YouTube is not currently available, the overwhelmingly positive feedback from the public on the relaxation video channels demonstrates its potential. Its practicality and convenience, particularly during periods of isolation like the COVID-19 pandemic, vacations, or remote work, make it a welcome relief in the often-burdensome process of stress management. This practicality can help individuals feel less overwhelmed by their stress.

Methodology: In this research, the new protocol, cyberphysiology, used an objective stress measurement of the cortisol level in the hair of the two groups of subjects. The treatment group learned acceptance and commitment therapy (ACT) concepts using mindful meditation self-hypnosis. The control group engaged in traditional stress reduction exercise videos.

Results: The Mann-Whitney U test from SPSS revealed a significant level of p value = 0.019. The results showed that practicing the cyberphysiologic (treatment) technique significantly improved stress levels compared to the common relaxation technique implemented in the videos for the control group.

Conclusion: This research reveals another practical approach to stress management through the cyberphysiologic method, which integrates self-regulation techniques such as autogenic training, imagery/visualization, meditation, and self-hypnosis (Olness,1989). In addition, it includes teaching acceptance and commitment therapy (ACT) principles via YouTube videos that can be accessed anytime, anywhere.

Keywords: stress, cyberphysiology, self-regulation, autogenic training, imagery, visualization, mindfulness meditation, self-hypnosis, ACT, YouTube

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Introduction

This research was built upon a randomized controlled pilot study published in the International Journal of Clinical and Experimental Hypnosis (IJCEH) in 2020 (Olendzki et al., 2020). The study focused on the integration of hypnosis with mindfulness. Dr. Gary Elkins, a key researcher in this study, highlighted the potential of this combination for providing practical and user-friendly stress treatment. The unique approach aims to improve user experience and ensure effectiveness and accessibility in stress treatment, instilling confidence in its practicality. Additionally, this research explored the use of guided imagery, an essential component of traditional hypnosis, through the widely accessible platform YouTube. This research aimed to induce altered states of consciousness and maximize the benefits of mindful self-hypnosis.

Mindfulness aims to promote non-judgmental present-moment awareness, which complements the techniques used in hypnosis to prepare individuals for suggestions of change. Positive results from Baylor University's pilot study (Goodrich, 2020) demonstrated the potential of integrating mindfulness and hypnosis in stress treatment. This research seeks to explore the feasibility of self-hypnosis at home further using pre-recorded sessions on a YouTube channel. Participants can follow the instructions in the video to induce a relaxed and focused state, with the potential for self-regulation using readily available mobile devices. The practical implications of this research could significantly enhance stress treatment research.

Methodology

Theory

This research was triggered by Sigmund Freud's delineation of three levels of the mind: the conscious, preconscious, and unconscious. The conscious mind encompasses all awareness processes, the preconscious mind holds thoughts and feelings that are not currently within conscious awareness, and the unconscious mind is the primary reservoir of human behaviors influenced by past experiences (Freud, 1915). The unconscious mind, which operates beyond the individual's conscious awareness, plays a significant role in shaping their behaviors and well-being. It stores memories, emotions, and desires that are too painful or unacceptable to be consciously acknowledged, yet they influence the individual's actions and feelings. Zeig (1980) stated, "The unconscious mind is made up of all your learnings over a lifetime, many of which you have completely forgotten, but which serve you in your automatic functioning. Now, a great deal of your behavior is the automatic functioning of these forgotten memories" (p. 66). This automatic functioning, which includes processes such as regulating bodily functions and responding to stress, operates without conscious attention, functioning at an unconscious level, regulated by the autonomic nervous system. However, Milton H. Erickson theorized that hypnosis is the tool for establishing communication with the unconscious mind and effecting behavioral change through reprogramming (as cited in Rossi, 2010).

Mindfulness can be a powerful gateway to empowering people with a non-judgmental, accepting, and adaptable approach to thoughts, emotions, behaviors, and situations. Engaging in mindfulness practices effectively lowers muscle tension (Ganjeali et al., 2020). It reduces autonomic arousal, including symptoms such as increased heart rate and sweating. Hypnosis, in

turn, can harness the hypnotic trance state induced by mindfulness, utilizing heightened suggestibility, relaxation, and vivid imagination to reprogram our automatic functioning. This automatic functioning operates without conscious attention, functioning at an unconscious level, regulated by the autonomic nervous system, which governs numerous automatic bodily processes, including triggering the fight-or-flight response and managing stress and threats to restore equilibrium.

With its focus on self-hypnosis explicitly tailored for stress reduction, cyberphysiologic techniques did not require the role of a professional in the field. However, the participant's eagerness to learn was integral to its success.

Method

In this cyberphysiologic research, the protocol integrated multiple self-regulation techniques into a single self-taught playlist spanning six training sessions. These sessions incorporate the core principles of acceptance and commitment therapy (ACT) and offer self-guided instruction through the user-friendly platform of the "Cyberphysiology" video communication channel on YouTube.

The primary goal of this research study is to investigate the potential impact of YouTube-based cyberphysiological interventions on stress reduction outcomes. To achieve this goal, this study was based on a quasi-experimental design. Subjects are assigned to groups based on non-random criteria that rely on a researcher's judgment, convenience, or specific characteristics of the selected individuals. However, like a true experiment, a quasi-experimental design seeks to establish a cause-and-effect relationship between an independent variable, cyberphysiologic technique, and a dependent variable, stress level.

Participants

From Alhaque et al. (2019) and Paleri et al. (2023)'s experiences, this experiment utilized the quasi-experiment, which compares two groups of volunteers using a YouTube channel. The experimental group included participants who received the intervention via Cyberphysiology videos on YouTube. Meanwhile, the control group did not receive the experimental techniques and watched the common relaxation videos, which were standard relaxation videos commonly available on YouTube and similar platforms. These videos were the same as their usual YouTube watching activities. This study evaluated the experimental and control groups' stress levels before and after the experiment.

Instruments

The study required participants to have access to and knowledge about YouTube video channels before beginning the experiment. An initial remote session was conducted to explain the process, help with setup, and configure their devices for the study. Following this initial session, participants received detailed instructions and a designated point of contact to assist them during each session. The research compared two stress level measurements: the hair cortisol stress kit and the Perceived Stress Scale (PSS). Only the cortisol test was taken both before and after the

experiment, and the PSS scored did not show adequate results initially to continue collecting at the end.

Results

By means of giving an overview of the data collected for this study, the data in Table 1 comprises the original 27 participants (Column A - Participant ID) who signed the consent form and agreed to submit the hair sample to the Advanced Food Intolerance Labs (AFIL) for stress test by cortisol level measurement. These participants were screened to meet adequate stress levels for the experiment and divided into treatment and control groups. The hair sample was analyzed using AFIL's state-of-the-art biotechnology, which assesses cortisol in the body to help the experiment identify the subject's stress levels. The stress level was recorded within range levels (0%–50%) and out of range (50%–100%). The baseline stress level is recorded based on these percent values in column J.

Table 1

Participants Summary

A	B	C	F	G	H	I	J	O
Participant ID	**Subject ID**	**Subject group ID**	**Age**	**Sex**	**Location**	**PSS**	**Stress level(pre)**	**Status**
1	1	Treatment	56	M	San Jose	13	66	Improve
2		Treatment	61	M	San Jose		3	Too LOW
3	2	Treatment	60	F	San Jose	8	66	Improve
4	3	Treatment	28	M	San Jose	16	78	Improve
5	4	Treatment	59	F	Orange	4	87	Improve
6	5	Treatment	60	F	San Ana	5	51	Improve
7	6	Treatment	51	F	Dallas	3	42	Improve
8	7	Treatment	50	F	Phoenix	8	33	decline
9		Treatment	36	F	Seattle		6	Too LOW
10	8	Treatment	59	F	Orange	6	54	Improve
11	9	Treatment	51	F	Dallas	6	78	Improve
12		Treatment	50	F	San Diego		6	Too LOW
13		Treatment	48	F	San Diego		96	Drop (no final result)
14		Treatment	61	M	San Diego		48	Drop (for test result only)
15	1	Control	78	F	Dallas	10	93	Improve
16	2	Control	56	F	Houston	6	69	decline
17		Control	70	F	Oklahoma		36	Drop (for test result only)
18	3	Control	27	M	Oklahoma	15	84	Improve
19		Control	55	F	Los Angeles		6	Too LOW
20	4	Control	51	F	Phoenix	8	39	decline
21		Control	72	F	Seattle		15	Too LOW
22		Control	59	F	Seattle		12	Too LOW
23	5	Control	68	M	Seattle	3	87	Improve
24	6	Control	64	F	Seattle	1	93	Improve
25	7	Control	54	F	Seattle	8	78	Improve
26	8	Control	79	F	Portland	7	69	Improve
27	9	Control	73	F	Portland	2	48	decline

Legend:

Color	Meanings
Red	Participation excluded from the experiment due to the low stress level.
Yellow	Two experiment groups divider.
Orange	Participant status excluded from the experiment.
Green	Participant status participated with stress level improvement.
Blue	Participant status participated with stress level decline.

In Table 2, the subjects only needed to submit the hair sample for the post-experiment stress level measurement indicated in column K. Column L shows the stress level differences with a positive value indicating *improve* and a negative value indicating *decline*, as indicated in column O for the initial assessment.

Table 2

Experiment Results

B	C	J	K	L	O
Subject ID	**Subject group ID**	**Stress level(pre)**	**Stress level(post)**	**% Change**	**Status**
1	Treatment	66	9	57	Improve
	Treatment	3			Too LOW
2	Treatment	66	18	48	Improve
3	Treatment	78	45	33	Improve
4	Treatment	87	30	57	Improve
5	Treatment	51	6	45	Improve
6	Treatment	42	39	3	Improve
7	Treatment	33	45	-12	decline
	Treatment	6			Too LOW
8	Treatment	54	33	21	Improve
9	Treatment	78	18	60	Improve
	Treatment	6			Too LOW
	Treatment	96			Drop (no final result)
	Treatment	48			Drop (for test result only)
1	Control	93	87	6	Improve
2	Control	69	93	-24	decline
	Control	36			Drop (for test result only)
3	Control	84	69	15	Improve
	Control	6			Too LOW
4	Control	39	54	-15	decline
	Control	15			Too LOW
	Control	12			Too LOW
5	Control	87	60	27	Improve
6	Control	93	81	12	Improve
7	Control	78	72	6	Improve
8	Control	69	45	24	Improve
9	Control	48	78	-30	decline

These data were subsequently prepared and analyzed using SPSS and online tools for statistical analysis. The experiment compared the stress level of 18 subjects' stress scores before and after in two different groups: (1) cyberphysiology techniques as a treatment group and (2) relaxation as a control group. These scores presented the participant's stress levels from 0 to 100; the high number showed high stress levels, and the low number showed low stress levels. The collected stress level data can be checked for normality to determine suitable statistical analysis methods.

Sample Characteristics

The null hypothesis for this normality test is that the data does not meet the normal distribution assumption. Reject the null hypothesis if the *p*-value is below 0.05. In a normal distribution, the mean, median, and mode should all be equal, or the skewness and kurtosis values should be as close to zero as possible, falling within the range of −1.96 to +1.96. Hence, not all the calculations indicated that the data from the Cyberphysiology group followed a normal distribution (see Table 3).

Table 3

Cyberphysiology Group Descriptive Normality Analysis From SPSS

Statistics[a]

		Stress (Before)	Stress (After)
N	Valid	9	9
	Missing	0	0
Mean		61.6667	27.0000
Median		66.0000	30.0000
Mode		66.00[b]	18.00[b]

a. Group = Cyberphysiology

b. Multiple modes exist. The smallest value is shown

The significant column under the Shapiro-Wilk test (last column in Table 4) indicates the significance of the normality test is larger than 0.05 and failed to reject the null hypothesis. This finding has significant implications for the stress levels in the Cyberphysiology group, as they were not distributed normally, which is a matter of concern (see Table 4).

Table 4

Cyberphysiology Group Tests of Normality From SPSS

Tests of Normality[a]

		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Stress (Before)	Cyberphysiology	.151	9	.200*	.962	9	.819
Stress (After)	Cyberphysiology	.172	9	.200*	.917	9	.368

*. This is a lower bound of the true significance.

a. Group = Cyberphysiology

b. Lilliefors Significance Correction

As indicated in the rules for normal distribution above, not all the calculations indicated that the data from the Control group followed a normal distribution (see Table 5).

Table 5

Control Group Descriptive Analysis From SPSS

Statistics[a]

		Stress (Before)	Stress (After)
N	Valid	9	9
	Missing	0	0
Mean		73.3333	71.0000
Median		78.0000	72.0000
Mode		69.00[b]	45.00[b]

a. Group = Control

b. Multiple modes exist. The smallest value is shown

Similarly, the significant column under the Shapiro-Wilk test in Table 6 indicated the significance of the normality test is larger than 0.05 and failed to reject the null hypothesis. That means the subjects' stress levels in the control group were not distributed normally.

Table 6

Control Group Tests of Normality From SPSS

Tests of Normality[a]

		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Stress (Before)	Control	.189	9	.200*	.893	9	.217
Stress (After)	Control	.116	9	.200*	.977	9	.945

*. This is a lower bound of the true significance.

a. Group = Control

b. Lilliefors Significance Correction

In summary, this experiment analysis used non-parametric statistical tests for analysis because the collected data did not distribute normally and small samples size = 18. The calculation values presented in the subsequent tables from SPSS outputs and the statistical analysis utilized included: Mann-Whitney U test and The Wilcoxon signed-rank test.

Mann-Whitney U Test (Compare the Treatments)

The first analysis involved comparing the treatments and encompasses the null hypothesis (H0): there is no difference in stress reduction between the cyberphysiology (treatment) and relaxation (control) group. The question was, "Is there a difference in stress levels between individuals who practice cyberphysiology and those who do not?"

The key findings of this analysis are as follows:

(1) As the Hypothesis test summary (Table 7) clearly indicated, the significant level is *p* value = 0.019, which is less than $\alpha = 0.05$. Therefore, the decision was confidently made to reject the null hypothesis, confirming that the stress change is indeed significantly different between the cyberphysiology (treatment) and the relaxation (control) group.

(2) Furthermore, the table and chart (see Table 7) clearly showed a significant difference in the mean ranks of both groups. The cyberphysiology (treatment) group demonstrated a substantial improvement, standing out with a Mean Rank of 12.44 and a Sum of 112, compared to the relaxation (control) group with a Mean Rank of 6.56 and a Sum of 59, from the 9 test subjects in each group.

(3) The effect size, a crucial measure in this analysis, is calculated using the formula: $r = (Z / \text{Sqrt}(N) = -2.342/\text{Sqrt}(18) = -0.552$. This value, larger than 0.5, indicated a significant effect. It provided a clear understanding of the magnitude of the difference between cyberphysiology and relaxation techniques, demonstrating a substantial effect size value.

Table 7

Mann-Whitney U Test Results From SPSS

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Stress Change is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.019[a]	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

a. Exact significance is displayed for this test.

Test Statistics[a]

	Stress Change
Mann-Whitney U	14.000
Wilcoxon W	59.000
Z	-2.342
Asymp. Sig. (2-tailed)	.019
Exact Sig. [2*(1-tailed Sig.)]	.019[b]

a. Grouping Variable: Group
b. Not corrected for ties.

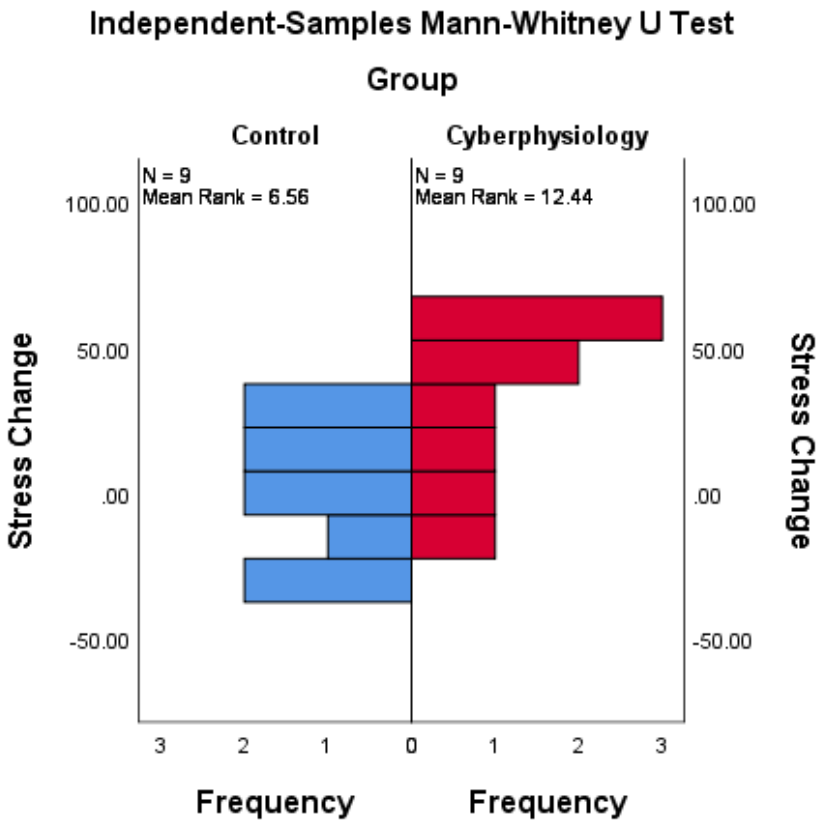
Ranks

	Group	N	Mean Rank	Sum of Ranks
Stress Change	Cyberphysiology	9	12.44	112.00
	Control	9	6.56	59.00
	Total	18		

Report

Median

Group	Stress Change
Cyberphysiology	45.0000
Control	6.0000
Total	18.0000



A Mann-Whitney U test revealed that stress scores were statistically significantly lower in the cyberphysiology (treatment) group (Md = 45.0000, *n* = 9) compared to the relaxation (control) group (Md = 6.0000, *n* = 9), Z = −2.342, *p* value = 0.019, with a large effect size, *r* = 0.552.

Wilcoxon Signed-Rank Test (Compare the Effectiveness of Each Treatment)

The second analysis, comparing the results within the group, covered the effectiveness of intervention with repeated measurement (before and after) of the same subjects within the cyberphysiology (treatment) and relaxation (control) groups. It answered these questions: (1) Did the cyberphysiologic technique reduce stress levels more effectively than the standard relaxation techniques? and (2) Was there a significant difference in stress levels before and after a cyberphysiologic intervention? Supporting evidence is provided in the following two sections for cyberphysiology (treatment) and relaxation (control) of the corresponding SPSS tables and figures.

Cyberphysiology (Treatment) Group

The experiment with the cyberphysiology (treatment) group compared the stress level of nine subjects' stress scores before and after watching the six cyberphysiology videos to learn how to manage their daily stress (see Table 8).

Table 8

Wilcoxon Signed-Rank Test Results from SPSS for Cyberphysiology Group

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between Stress (Before) and Stress (After) equals 0.	Related-Samples Wilcoxon Signed Rank Test	.015	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Statistics[a]

		Stress (Before)	Stress (After)
N	Valid	9	9
	Missing	0	0
Mean		61.6667	27.0000
Median		66.0000	30.0000
Mode		66.00[b]	18.00[b]

a. Group = Cyberphysiology

b. Multiple modes exist. The smallest value is shown

Test Statistics[a,b]

	Stress (After) - Stress (Before)
Z	-2.431[c]
Asymp. Sig. (2-tailed)	.015

a. Group = Cyberphysiology

b. Wilcoxon Signed Ranks Test

c. Based on positive ranks.

A Wilcoxon signed-rank test revealed that stress scores were significantly lower after the Cyberphysiology intervention (Md = 27.0000, n = 9) compared to before (Md = 61.6667, n = 9), z = −2.431, p value = 0.015, with a large effect size, r = 0.810.

Relaxation (Control) Group

The experiment with the relaxation (control) group also compared the stress level of nine subjects' stress scores before and after watching the six relaxation videos to manage their daily stress (see Table 9).

Table 9

Wilcoxon Signed-Rank Test Results from SPSS for Control Group

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between Stress (Before) and Stress (After) equals 0.	Related-Samples Wilcoxon Signed Rank Test	.766	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Statistics[a]

		Stress (Before)	Stress (After)
N	Valid	9	9
	Missing	0	0
Mean		73.3333	71.0000
Median		78.0000	72.0000
Mode		69.00[b]	45.00[b]

a. Group = Control

b. Multiple modes exist. The smallest value is shown

Test Statistics[a,b]

	Stress (After) - Stress (Before)
Z	-.297[c]
Asymp. Sig. (2-tailed)	.766

a. Group = Control

b. Wilcoxon Signed Ranks Test

c. Based on positive ranks.

A Wilcoxon signed rank test revealed that stress scores were not significantly lower after the control intervention (Md = 71.000, n = 9) compared to before (Md = 73.333, n = 9), z = −0.297, p value = 0.766, with a small effect size, r = 0.099.

Discussion

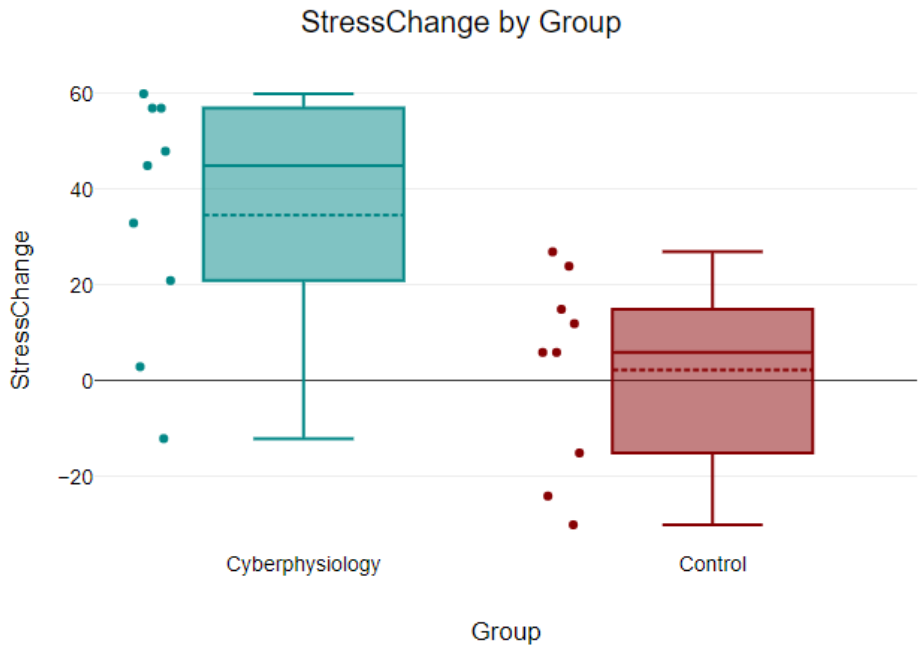
Findings

This research aimed to measure stress levels and evaluate the effectiveness of stress reduction techniques. The results, including skewness and kurtosis, a Shapiro-Wilk's test (p > .05), and a visual inspection of the histogram and normal Q-Q plots, revealed the stress levels recorded

were not normally distributed for both the cyberphysiology group and the control group, necessitating the use of nonparametric tests for a statistically significant analysis. Eighteen randomly sampled subjects (dots in Figure 1) were asked to watch a YouTube channel for stress reduction. The channel featured both cyberphysiology (treatment) and relaxation (control) techniques. The dots in Figure 1 vividly illustrate the effectiveness of these techniques, with a positive number indicating an improvement in stress levels and negative values showing the opposite result.

Figure 1

Stress Level Change by Group



The results showed that practicing the cyberphysiology (treatment) technique significantly improved the stress level compared to the common relaxation technique implemented in the videos for the control group, highlighting the importance of these findings. The results also showed that the common relaxation intervention did not significantly influence participants' stress levels in this experiment, further emphasizing the superiority of cyberphysiology in stress management.

Limitations

The findings are indeed remarkable, but it is crucial to acknowledge the following constraints and potential sources of bias that may have influenced the results. For instance, even though the sample size of 18 is acceptable for this experiment, there may be more accurate representations of the population. Especially in neuroscience, small sample sizes can also lead to low statistical power, inflated false discovery rates, and low reproducibility. The samples are primarily female and only cover a small area of the country, which could potentially impact the generalizability of the results and underline the need for further research.

Future Directions

The limitations outlined in this study offer valuable insights for future research. By directly addressing these limitations, subsequent studies could provide a comprehensive and critical evaluation of the study's validity and reliability. Expanding on the findings and constraints discussed, future research could explore the potential of cyberphysiology in managing various mental health conditions, including chronic anxiety, depression, and sleep disorders. Additionally, investigating the integration of biofeedback and neurofeedback techniques could optimize the effectiveness of the cyberphysiologic approach. Moreover, future studies involving a more extensive and diverse pool of research participants can help address the limitations highlighted in this study.

Intervention Evaluation

This study successfully introduced a stress management technique aimed at helping individuals align their actions with their core values through self-regulation of their minds to overcome stress feelings. The two concepts at hand are: (1) meditation, which is deeply rooted in ancient traditions and centers around mindfulness and present-moment awareness; and (2) ACT, a modern therapeutic approach that emphasizes acceptance, cognitive defusion, and commitment to values-based actions (Gloster et al., 2020). By incorporating mindfulness, acceptance, and values-based actions, it becomes possible to enhance psychological flexibility, reduce stress and anxiety, and cultivate a more meaningful and fulfilling life. However, this combined approach also brings about challenges, such as the intricacy of integration, time commitment, potential resistance, individual differences, and measurement of outcomes.

Conclusion

Stress is a widespread issue that impacts individuals in various aspects of their lives, including work, education, and personal relationships. While traditional stress management methods like cognitive-behavioral therapy (CBT) and mindfulness are effective, they often demand significant time and dedication. A new approach called mindful hypnosis, which combines mindfulness and hypnosis, has recently gained attention as a promising stress management technique. According to a pilot study conducted by Baylor University, this intervention has shown promise (Goodrich, 2020). Additionally, this research reveals another effective approach for stress management through the cyberphysiologic method, which integrates self-regulation techniques such as autogenic training, imagery/visualization, meditation, and self-hypnosis (Olness,1989). In addition, it includes teaching acceptance and commitment therapy (ACT) principles via YouTube videos that people can access anytime, anywhere.

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