

Reducing Stress with Short-Time Interventions: CAVA

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Abstract

Introduction: *Stress, especially under the current situation with the global COVID-19 pandemic, is one of the major factors in endangering both mental and physiological health. Mindfulness and meditation programs promise help but often are time-consuming and require a longer learning process.*

Objectives: *The objective of this article is to evaluate an extremely short-term meditation intervention named CAVA, which provides a variety of brief exercises (90 seconds x 4 times daily).*

Methods: *Over 1000 subjects participated in a 28-day long intervention using these meditation techniques. Participants underwent only basic instruction, and no explicit teaching was provided.*

Results: *Using a questionnaire before and after the training, the results showed clear improvements in participants, both at psychological and at physiological level.*

Conclusions: *Using specific intervention clips stress-related problems can improve after a short period of intervention without long term training. This opens the opportunity of reaching people who otherwise cannot be interested in programs with a long learning curve and also in general addresses the question of effective interventions that can save both time and cost.*

Keywords: *stress, COVID-19, physical health, psychological wellbeing, meditation, mindfulness*

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I. Introduction

Stress is one of *the* root causes for health problems. The World Health Organization (WHO) even classifies stress as the health epidemic of the 21st century.

The current situation under the COVID pandemic adds to various stress symptoms and consequent stress-related diseases, as studied with large samples in at least 48 countries (overview Abbott, 2021). Problems encountered include: depression, anxiety disorders, panic attacks, irrational anger, impulsivity, somatization disorder, sleep disorder, emotional disturbance/ dysregulations, post-traumatic stress – and even suicidal behavior (review: Hossain et al., 2020).

Over the last decades, meditation and mindfulness practices have become more and more the focus of public as well as scientific interest as means for reducing stress. Both words are often used interchangeably – but actually though meditation and mindfulness are interrelated, the concepts are not the same. Jon Kabat-Zinn (various sources, e.g., 1994), who was fundamental in introducing mindfulness into stress reducing programs (more on that topic later), defines mindfulness as “awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally”. This probably is the definition most commonly used by researchers.

In contrast, Walsh and Shapiro (2006) define meditation as a “practice where an individual uses a technique – such as mindfulness or focusing the mind on a particular object, thought, or activity – to train attention and awareness, and achieve a mentally clear and emotionally calm and stable state”.

Thus, mindfulness is more of a state, a way of relating to oneself and the environment, while meditation is a practice, a program, meant to alter one’s state of mind – though which afferent states (including mindfulness) can be achieved. In other words, mindfulness is your current state of mind, while meditation can be the means to get there.

Mindfulness meditation – as a meditation focused on achieving an afferent state of mindfulness – in particular is popular also among people who would not normally consider meditation (Pickert, 2014). That mindfulness in particular and meditation in general (can) have positive impact on both psychological and physiological factors is more or less undisputed. Skepticism though arises from the unfortunate fact that popular authors as well as scientists often tend to overstate the benefits of these practices. Van Dam et al. (2018) thus criticize that the science behind mindfulness

meditation often suffers from poor research designs and small effect sizes.

One of the first and still probably most well-known programs for stress reduction through mindfulness meditation is Mindfulness-based stress reduction (MBSR), an eight-week evidence-based program offering secular, intensive mindfulness training to assist people with stress, anxiety, depression and pain, developed in the 1970s by Jon Kabat-Zinn (1990, e.g.). As a side note: while meditation is practiced in numerous religious traditions, hardly anyone today claims that meditation necessarily is a strictly Buddhist and esoteric ritual, but the public opinion recognizes that there is a clearly secular version of meditation.

By now, several hundred scientific papers on the effects of mindfulness meditation have been published.

But keep in mind that – as mentioned above – the scientific qualities are variable and the effect size also dramatically varies. Hardly disputed is that mindfulness trainings improve focus, attention and ability to work under stress (Grossman et al., 2010, e.g.). Recent research also points toward receiving more self-compassion especially for caregivers (Smith et al., 2020).

Subject groups include healthy adults (Khoury et al., 2015), adolescents and children (reviews: Zenner, Herrleben-Kurz & Walach, 2014; Dunning et al., 2019). People affected by the following can profit: psychiatric conditions (reviews: Spijkerman, Pots & Bohlmeijer, 2016; Hofmann et al., 2010), eating disorders (Sala et al., 2020; Carriere et al., 2018), pain management (Hilton et al., 2016), cardiovascular health (Levine et al., 2017), fibromyalgia (Henke & Chur-Hansen, 2014), sleep disorders (Wang et al., 2020), cancer care (Xunlin, Lau & Klainin-Yobas, 2020; Xie et al., 2020), psychological distress (Creswell, 2017) and other health-related conditions.

While this sounds mind-blowing, there are certain caveats to be regarded. First, many programs can take time to learn and to exercise. Take MBSR, e.g., the original program consists of an eight-week course, with daily group sessions of 90 minutes and individual exercises of 45 minutes daily. Such a setting can only be realized in clinics or rehabilitation centers. Hardly the framework for a daily routine. To be fair, of course, MBSR was never claimed to be easy to integrate into daily life.

But it points to another problem, associated with many mindfulness meditations: interested subjects need courses and trainings to learn the specific concept of *this* mindfulness program. It is easy to understand that this is *not* a low threshold for people to try out the

concept. Especially, highly stressed people often shy away from investing considerable amounts of time. But especially for highly stressed people it is important to be reached by stress-reducing mindfulness exercises and meditations.

Given you have taken the time to learn the mindfulness practice, there is also the matter of the length of meditation itself. Usually, the lower limit for a meditation is considered around 10 minutes, but in many traditions a duration of 20-30 minutes is more typical – or even of 45-60 minutes (Ott, 2019).

For highly stressed-out people this time often simply seems too much time. Especially when it takes them quite some time before they can experience the benefits of meditation. This high threshold often increases stress when one is trying to integrate the meditation into the daily routine – instead of reducing it.

Plus, certain types of meditation often require specific settings: the most prominent one being finding a quiet place where one is undisturbed, or assuming certain body postures.

Here we ask the question whether a specifically designed program (CAVA) of extremely short-term exercises, ideally carried out four times a day can be of help reducing stress. Each exercise is as short as 90 seconds and can basically be carried out anywhere.

CAVA

The CAVA program was developed by Dirk Rauh. The CAVA program consists of a list of different 90 second exercises which can be chosen according to time of day, current mood and needs, etc.

This includes the exercises with the following foci:

- evening: preparing for the night;
- tension-relaxation (using the same mechanism as Progressive muscle relaxation);
- breathing technique;
- recharging;
- power nap;
- balancing;
- thankfulness/ optimism;
- clearing the mind;
- love/ positive thinking;
- releasing negative thoughts;
- morning: starting the day;
- nature;
- inner protection;
- self consciousness;
- transformation;
- finding/ reaching goals.

Each 90 second clip is a guided meditation specific for the topics mentioned above.

II. Method

In total 1144 subjects participated in the study. Subjects were recruited via advertisements in companies and on internet platforms.

Subjects could download four CAVA exercises from an internet platform as .mp3 files and play them back on computer, smart phone or any other device. They got instructions on how to use them technically and were asked to practice them daily for 28 days.

A questionnaire was used before and after the training. The questionnaire consisted of items from standardized questionnaires (Leipziger Stimmungsbogen (The mood questionnaire of Leipzig), Hinz, Hessel & Brähler, 2006; “Profile of Mood States” – POMS, McNair, Lorr & Doppleman, 1971) adjusted to the research questions of this study and included questions for both physiological as psychological inquiries: on the physiological side f. e. stomach ache or bad sleep; on the psychological side f. e. mood, energy, anxiety about the future, ability to relax and others.

Subjects responded using a five-point-scale from 1 (not applicable) to 5 (completely applicable).

After the training, subjects were additionally asked to judge their compliance subjectively from 1 (I did not do the exercises consequently) to 5 (I did the exercises consequently).

The questionnaire also was presented via internet platform. Due to this way of data collection for technical reasons it was not possible to use an intra-individual design for reasons of anonymity. The design is thus an inter-individual one.

Data were collected according to the WMA Declaration of Helsinki (Ethical principles for medical research involving human subjects). Subjects gave informed consent.

Data were analyzed using Excel and Adobe Illustrator was used in creating the figures.

III. Data and results

Post data first were analyzed as a homogenous group including all data regardless of the self-judged compliance (in the following the group “post_all”). For further detail in a second analysis subjects who rated their compliance as low (1 or 2) were excluded – this group with only average or high performance (3-5) is called “post_high”).

Eleven different psychological parameters were analyzed. Values (responses on the 5-point-scales)

improved on each of these levels significantly for the post_all-group (Figure 1). Sorting out the people with average or high compliance (the post_high-group) the increase in performance got even more pronounced (Figure 1).

Four different physiological parameters were analyzed. The picture is similar to the one for psychological

parameters. Values (responses on the 5-point-scales) improved on each of these levels significantly for the post_all-group (Figure 2), besides for the parameter “teeth clenching”. Sorting out the people with average or high compliance (the post_high-group) the increase in performance got even more pronounced (Figure 1).

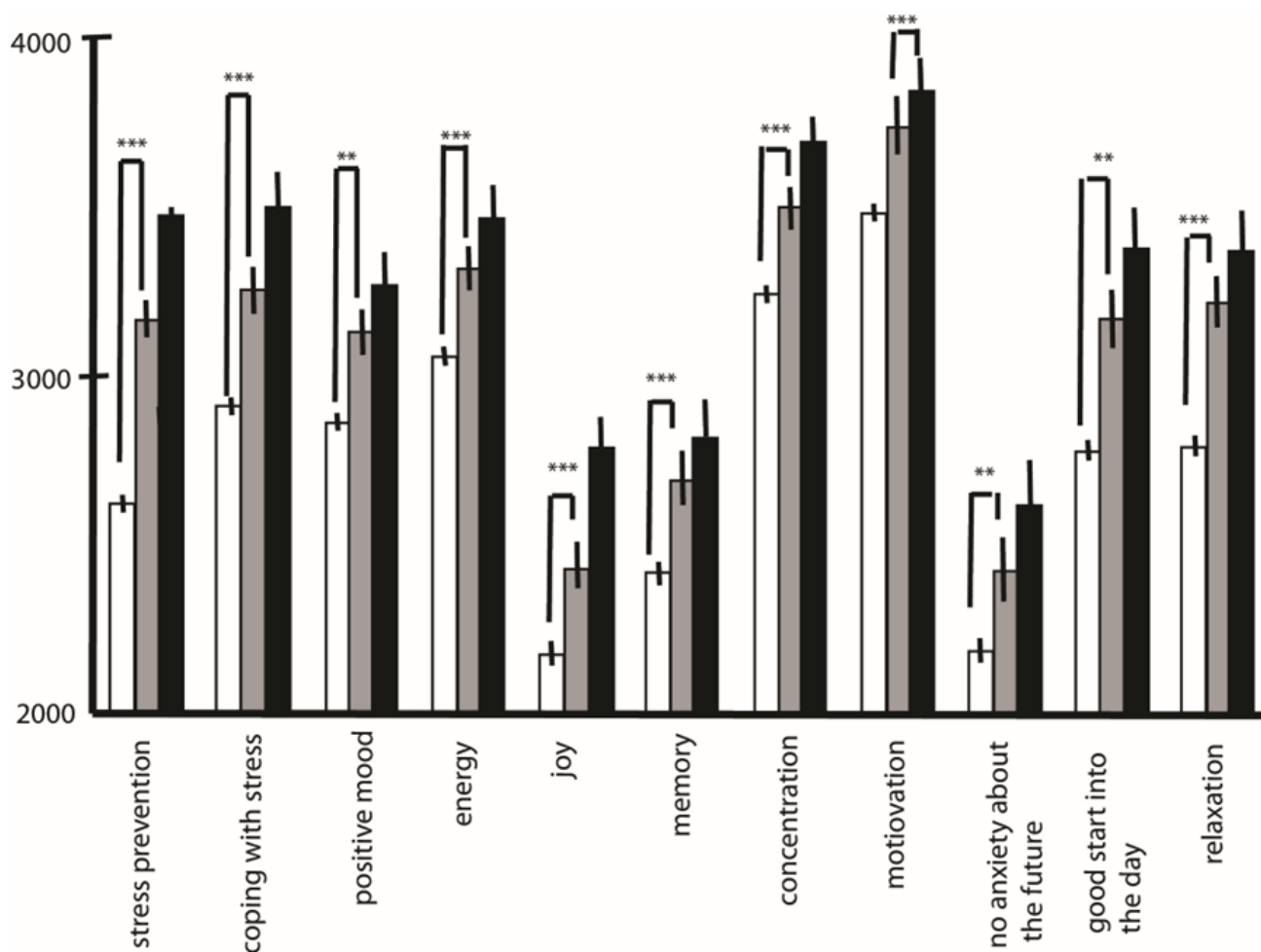


Figure 1:
Ratings for psychological parameters on the scales of the questionnaire (1-5) before (pre) (white) and after the training. After the trainings both all subjects (post_all) (grey) and a subgroup of subjects with self-judged high compliance (post_high) (black) are depicted.

Error bars depict standard error.
(*** means $p < 0.001$, ** means $p < 0.01$).

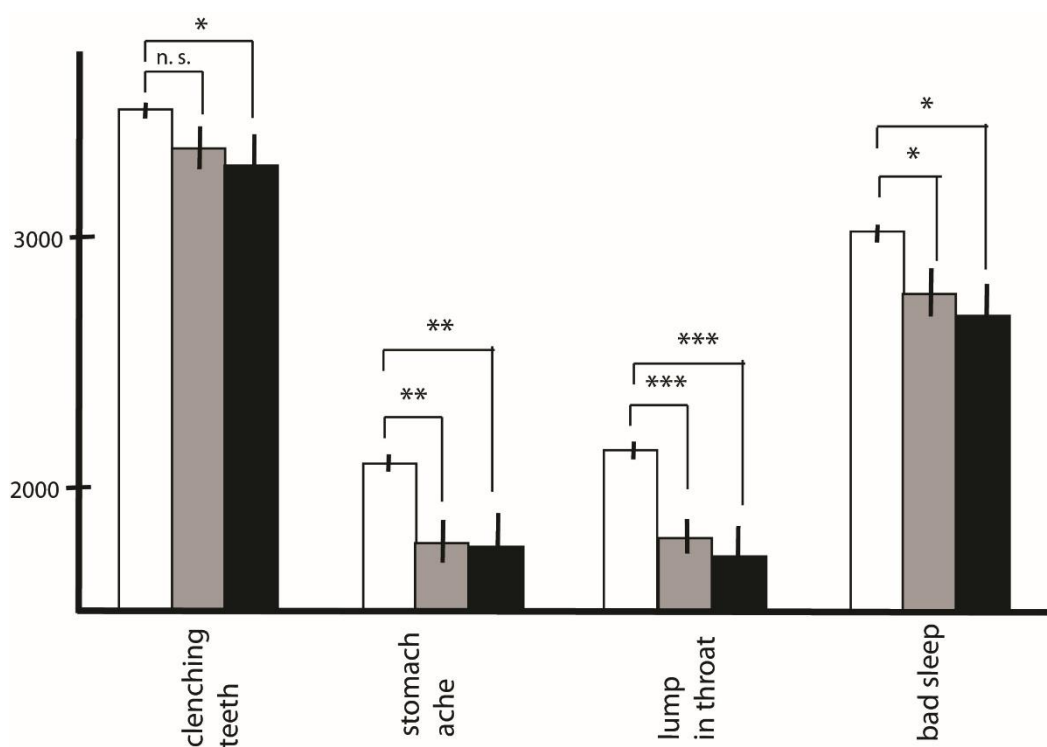


Figure 2:
Ratings for physiological parameters on the scales of the questionnaire (1-5) before (pre) (*white*) and after the training. After both trainings, all subjects (post_all) (*grey*) and a subgroup of subjects with self-judged high compliance (post_high) (*black*) are depicted.

Error bars depict standard error.
(*** means $p < 0.001$, ** means $p < 0.01$, * means $p < 0.05$).

V. Discussion

The idea of extremely short-term exercises has found entrance in popular books (e.g., Boroson, 2011; Parke, 2011; Altman, 2011) – but without a scientific context and consequently without scientific studies. Here we provide evidence for a scientific-based short-term intervention program (CAVA) that does not require a longer learning period and – most importantly – implies only minimal time requirement during the day.

Stress factors and the experience of stress are highly individual. This also applies the other way around: stress reducing factors are highly individual, too. Of course, this means that various stress-reducing programs are adequate for different individuals. Here we offer a framework where people have a variety of

exercises they can pick from. So, different individuals can choose different exercises – and also the same individual can adjust his or her choice according to current mood and necessities.

It is important to point out that this method is mostly a self-learn program. With minimal instructions individuals can try out which exercises they might benefit from.

This and the fact that exercises require so little time and can be done anywhere makes it low threshold for people with a busy time schedule.

A typical criticism of scientific studies is the low effect size (Van Dam et al., 2018). Here we report mostly high significances ($p < 0.001$). Cohen's

d as a measure of the effect size in the group with high compliance is overall 0.6, thus a medium size effect (Cohen, 1988). Please keep in mind that this averages different measurements with different interpretations and different effects sizes – for individual parameters effect size can be as high as 0.9 for stress prevention.

As mentioned above, there is an ongoing discussion and confusion about the definition and use of terms *mindfulness state*, *meditation practice*, *mindfulness meditation*... and into which category to fit a program. We consider it a strength of this program that the 90 second interventions are able to bear different interpretations/ values for the subjects – they decide themselves how and what to focus on.

As mentioned, the subjects were recruited from a broad public. As the large number of subjects indicated, interest in such a program is definitely there.

What also should be mentioned, is that the interest is not restricted to a particular age group – this study included subjects from the age of 19 to 81(!!!).

V. Conclusions

Overall, first data on the CAVA intervention provide evidence that this method has significant impact on psychological and physiological health after a short period of time (4 weeks).

Further research is needed to evaluate its effect on a longer-term basis, as well as to compare it directly to other types of intervention.

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