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Stress, Relaxation, and Mindful Breathing: A Primer

Kevin E. Vowles, Ph.D.



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Educational Objectives

At the conclusion of this activity participants should be able to:

- State the relation between stress and bodily responses.
- Summarize the rationale for relaxation and mindfulness in the clinic in relation to stress, pain, and distress.
- Describe to patients the clinical utility for relaxation and mindfulness.
- Demonstrate introductory-level knowledge in instructing these two techniques based on the scripts provided.

Early Stress Research in Animals

- Walter Cannon¹
 - Coined term “fight or flight” response (1915) in relation to stress
 - Stress in humans are external factors that disrupt internal balance in humans (“homeostasis;” 1932).
- Hans Selye² (1956)
 - Injected rats with tissue extracts from various body organs.
 - Found similar response – Inflammation, hypertrophy of organs, ulcers
 - Described three stages stress response as the “*General Adaptation Syndrome*” (alarm, resistance, exhaustion)

Stress in Humans

- Stressors in humans can be more persistent and longer-term than in animals. They can include chronic disease and illness, as well as economic, social, or physical stressors in one's environment.
- These chronic stressors can contribute to a variety of negative direct and indirect health impacts on health, such as:
 - Increased pain and discomfort, Decreased immune system efficiency and effectiveness, Poorer adherence to treatment, Problematic Substance use, and Disrupted social functioning (e.g., social isolation, anger)

Relaxation and Mindfulness

- This webinar will discuss the use of two behavioral breathing techniques to help reduce stress and enhance attention to the present. These two techniques are:
 - Diaphragmatic Breathing
 - Mindful Breathing

Realistic Expectations

- While these two techniques are *unlikely* to fully mitigate the negative effects of prolonged severe stress, they represent discrete behavioral exercises that:
 - Are relatively easy to teach
 - Can be used in primary care settings
 - Offer patients some “tools” to be used in the midst of stressful situations
 - When practiced, may allow more effective responding to chronic stressors, thereby lessening long term problematic impacts.

The “Relaxation Response”

Edmond Jacobsen³ – 1930’s

The relaxation response presented as an alternative to the “fight-or-flight” stress response.

Related to Wolpe’s⁴ concept of “reciprocal inhibition” – one cannot be **ANXIOUS** and *relaxed* at the same time

Diaphragmatic Breathing

- A simple technique that works well for many.
- Deep and slow breathing with your “belly.”
- Incorporated intentionally or unintentionally into many other relaxation techniques.

Clinical Rationale for Patients I

- Diaphragm is the large muscle separating the lungs from many other internal organs.
- Its movement makes the lungs expand and contract.
- When we are anxious, we can begin to breath more from our chest, which allows less room for the lungs to expand meaning less oxygen in the bloodstream, and this can have the effect of moving the body into “fight or flight” mode.

Clinical Rationale for Patients II

- Ask patient to place one hand on his/her chest and the other on her/her belly.
- Instruct patient to breath and make chest hand move. These breaths are generally shallower and more likely to make us feel short of breath.
- Next, instruct patient to breath and make the belly hand move. These breaths generally are deeper, as they “pull” the diaphragm and allow the lungs to have a larger space to expand into.
- More oxygen makes it into the blood stream and can help move the body into the “relaxation response” mode.

Clinical Rationale for Patients III

- If planning on practicing with patient in the clinic, ask patient to sit in a chair comfortably. Eyes can be closed or open. If the latter, ask them to pick a point on the ground or wall and settle his/her gaze there.
- Ask patient to keep/replace hands on chest and belly and begin to breath diaphragmatically – begin to breathe with his/her belly.
- As time allows, have patient breath in this way for ~5 minutes, cuing them periodically to notice their breath and how they currently feel.

Post-Exercise Discussion

- After the allowed time has elapsed, ask patient to return attention/awareness to the present.
- Common experiences are:
 - Relaxation
 - “Felt like I was falling asleep”
 - Warmth
 - Perhaps a bit dizzy or a tingling in arms legs as a result of more oxygenated blood.
- These experiences can be characterized as a relaxation response.
 - Ask patient to notice that this response was the result of voluntary behavior and that this is likely a skill. If warranted, encourage frequent/daily practice.

Behavioral Experiments

- Before and After this exercise, you may record:
 - Physiological activity such as heart rate, blood pressure, respiration rate, digit temperature.
 - Current level of stress or pain using a simple 0-10 rating, where 0 = “no stress/pain” and 10 = “maximal stress/pain”
 - These indices can change before and after the exercise and can be used as evidence of success or effect. Further, they can also be recorded over time before and after practice to track longer-term effect or changes.

Mindful Breathing

- Mindfulness involves noticing what is happening in the present and letting present experiences come and go as they will.
- Mindfulness techniques place primacy on greater and more accepting awareness of the present, and it can be focused on particular sensations or activities (e.g., breathing)
- Mindfulness training can be used to cultivate a more deliberate and gentler response to ongoing experience.

Clinical Rationale for Patients I

- Mindfulness provides opportunities to do important things or respond effectively to life's stressors
- We can be more attentive to the present, as many things can sometimes pass us by without us noticing.
- There can be value in noticing what is happening around us without automatically reacting.

Clinical Rationale for Patients II

A sample rationale:

“Have you ever come home from a hard day to someone (or had another person come home to you) who met you at the door and said something upsetting or irritating? Have you ever said something hurtful in response before you even knew the words were going to come out of your mouth? It’s like we spoke before we thought about the potential hurt that would cause – and we sometimes later regret even saying the words. Wouldn’t it have been nice to have spent even a split second of time evaluating those words, the potential impact they were going to have, and to have consciously made a decision about whether that was something we wanted to say or not? At the very least, it may have afforded an opportunity to decide.”

The exercise I’d like us to practice here is essentially about paying better attention to the present. There is nothing magical about these exercises – they simply involve paying attention when that is appropriate and useful. At the very least, that may allow us to make more effective decisions about the actions we take.”

Clinical Rationale for Patients III

- If planning on practicing with patients in the clinic, ask patients to sit in a chair comfortably. Eyes can be closed or open. If the latter, ask them to pick a point on the ground or wall and settle his/her gaze there.
- This exercise is essentially asking a patient to “notice”. One may start with more tangible things to notice, such as “notice what it feels like to sit” or “notice sounds” and then can move to “notice what it feels like to breathe.”
- As time allows, have patient do exercise ~5 minutes, cuing them periodically to notice what they feel/hear/etc and, if attention has wandered off the breath, to gently bring it back

Script and Recording



Click above for recording of an introductory mindfulness session

Click [here](#) for sample script of introductory mindfulness session.

Post-Exercise Discussion

- After the allowed time has elapsed, ask patient to return attention/awareness to the present.
- Common experiences are the same as following Diaphragmatic Breathing.
- It can important to aid patients in discerning relaxation response and the noticing of distraction versus present focused awareness.
 - For example, relaxation may have happened during this exercise and did the patient notice what it's like to feel relaxed?
 - Did he or she notice when distraction was happening and could attention be brought back to the present?
- What is the potential utility of being present? It can allow effective responding and noticing of opportunities for action.

Contraindications

- Sometimes patients can have a paradoxical effect and become more anxious during these exercises.
- If that happens, discuss and normalize this response with the patient.
- Some causes of the paradoxical effect can be ongoing anxiety, significant environmental stress, or a history of difficult or traumatic circumstances.
 - If these appear relevant causes, consider referral to a mental health care provider for further follow-up and treatment, if warranted.

Evidence synopsis for chronic pain - *Relaxation*

- Dunford & Thompson, 2010, *British Journal of Pain*⁵
 - *Evidence for short term beneficial effect; improvements may not be maintained over time.*
- NIH Technology Assessment Panel on Integration of Behavioral and Relaxation Approaches Into the Treatment of Chronic Pain and Insomnia, 1996, *JAMA*⁶
 - *Strong evidence of at least short-term effect*

Evidence synopsis for chronic pain - *Mindfulness*

- Bawa et al, 2015, *British Journal of General Practice*⁷
 - *Evidence of heterogeneous effects on outcomes (i.e., small to large effect sizes); Better quality studies needed; Controlled studies showed weaker effects.*
- McCracken & Vowles, 2014, *American Psychologist*⁸
 - *In conjunction with other behavior change therapies, reasonable evidence of overall efficacy.*
- Veehof et al, 2016, *Cognitive-Behavior Therapy*⁹
 - *Small to large effect size at follow-up; Behavior change therapies plus mindfulness seem to have larger effect sizes than mindfulness alone.*

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- PCSS Mentor Program is designed to offer general information to clinicians about evidence-based clinical practices in prescribing medications for opioid use disorder.
- PCSS Mentors are a national network of providers with expertise in **addictions, pain, evidence-based treatment including medications for opioid use disorder (MOUD)**.
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