

ANXIETY & STRESS MANAGEMENT

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Arousal vs. Anxiety/Stress

Arousal is one's level of attentiveness, alertness, responsiveness to stimuli, etc. It can be high or low. And, anxiety/stress can be conceived as a high level of arousal.

And for some tasks, as we'll see, a moderate level of arousal is actually beneficial. But, it can become so high as to be debilitating, as with anxiety attacks or panic attacks.

Stress can be an important motivator. If it's short-lived and problem-focused, it can prompt us to remove the source of stress. For example, a deadline for a report/project pushes us out of procrastination and into action.

But, if we don't feel we can remove the source of stress, or if we have too many stressors, stress can turn into ***distress***, which is a feeling of powerlessness that exacerbates worry and has the potential for negative consequences in a number of areas of life.

Arousal vs. Anxiety/Stress

Anxiety can also be thought of as acute (intense, short-term; state as opposed to trait) stress, high levels of unpleasant arousal, nervousness, or the experience of fear.

Physiologically, acute anxiety is an adrenaline (epinephrine) response to a perceived threat (whether the threat is real or not).

The 'Fight or Flight' response is when your body floods you with adrenaline (as well as Glucocorticoids, though adrenaline is what we'll focus on because of its relation to breathing and thus pH), making you feel very uncomfortable.

Adrenaline release in a real threat has many beneficial effects. However, when not in a truly threatening situation, the release of adrenaline induces feelings of fear that seem to 'come out of the blue.' A panic attack is thus a sudden release of adrenaline when there's no specific external threat, and it's a scary experience.

Arousal vs. Anxiety/Stress

As we try to **interpret** fear, we look to find a plausible threat in the environment (e.g., embarrassment, assault) and if none is there, interpret it as an internal threat (e.g., heart attack).

Many who have panic attacks wind up going to the Emergency Room believing they are having a heart attack or 'going crazy.' What they are having in reality, is an errant adrenaline (epinephrine) response. It's a flight/flight alarm (or false alarm) going off without a real threat present, but that's not unusual.

In fact, about 1/3 of all people will have a panic attack within their lifetime. For most who experience a panic attack, it's a one-time thing and most do not actually develop an anxiety disorder. But, some will and those who don't have diagnosable anxiety disorders can still suffer negative effects from prolonged anxiety/stress.

Long-Term Effects

Chronic anxiety/stress increases Glucocorticoids (e.g., cortisol and corticosterone), decreasing Brain-Derived Neurotrophic Factor (BDNF), yielding brain cell atrophy and possible neuronal death. In other words, chronic anxiety/stress can potentially kill brain cells, particularly in the hippocampus (associated with memory) and other limbic structures (associated with emotion and arousal).

Chronic increases in Glucocorticoids and chronic sleep difficulties (also associated with anxiety/stress) contribute to impaired immune functioning. This makes it easier to get sick and harder to get better. Increased Glucocorticoids and decreased BDNF are also associated with depression.

Increased exercise, having fun, intellectual stimulation, and antidepressant medications (and St. John's Wort) appear to decrease Glucocorticoids and increase BDNF, yielding brain cell growth/survival, and enhanced immune functioning. Thus, learning to control your response to anxiety/stress can be critical for overall health.

Anatomy & Physiology of Panic: Blood, Muscles, Heart & Lungs

The heart is a muscle and during anxiety attacks it races, and under stress we often tense up various muscles without being aware of it, and these factors cause us to use up more O_2 and produce more CO_2 , leading to respiratory acidosis.

We also wind up breathing more rapidly, but it is usually shallow breathing. To get more O_2 and to get rid of more CO_2 , we need to breathe to the bottom and periphery of the lungs (to the alveoli).

But, most people breathe to their upper airway unless they are trained to breathe correctly, which we were born doing, but stop for some reason.

Ask an adult to take a deep breath, and they'll puff up their chest. Notice that babies' chests don't heave when they breathe because they don't breathe to their upper airway; their bellies move up and down.

Anatomy & Physiology of Panic: Blood, Muscles, Heart & Lungs

In the blood, we must maintain a narrow pH balance (acid/base) –between 7.35 and 7.45 (slightly alkaline).

Respiratory acidosis occurs when the body can't rid itself of carbon dioxide (CO₂) efficiently and blood pH drops significantly below 7.4.

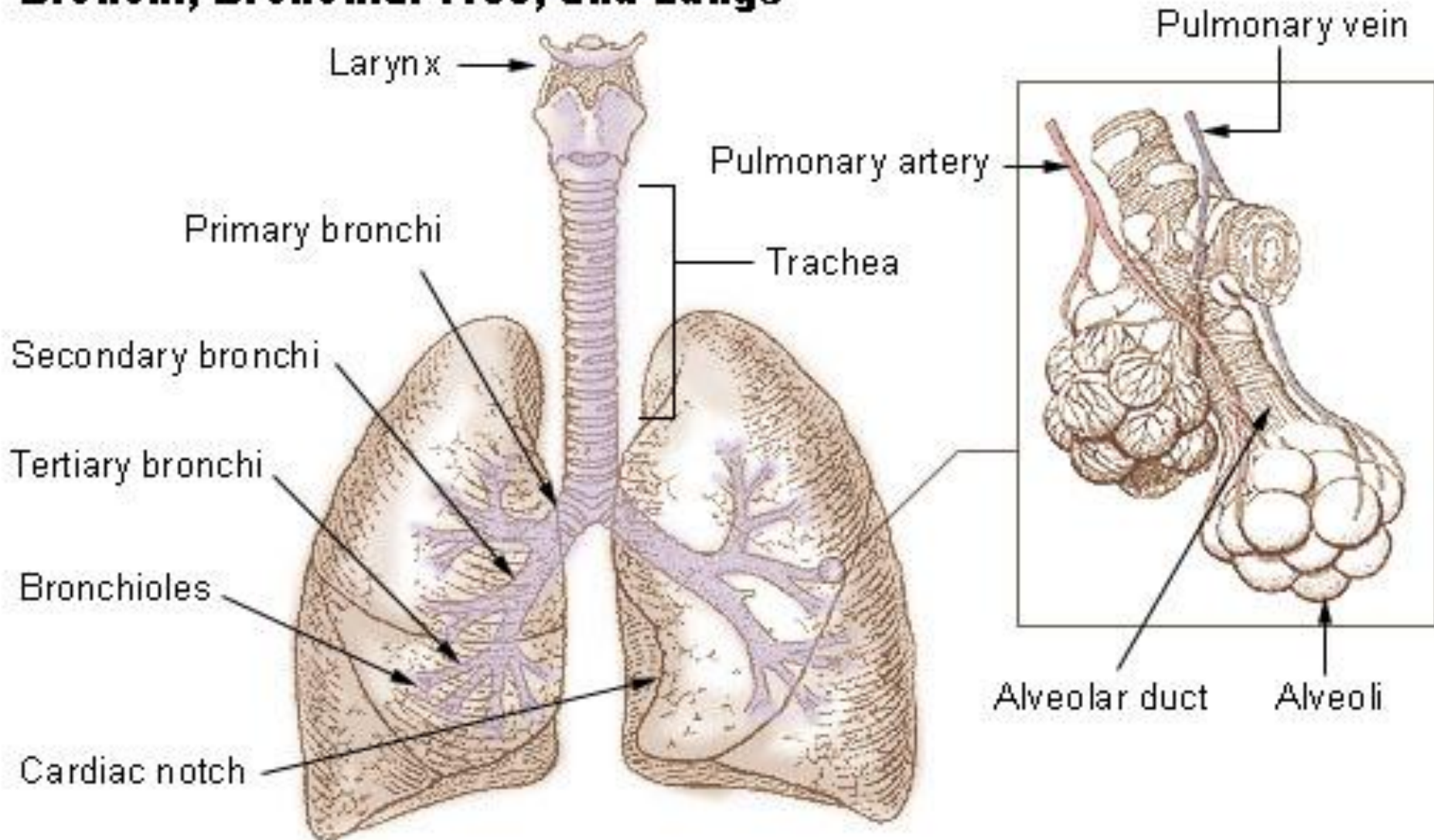
Some of the symptoms can include increased heart rate and shortness of breath (which is exactly what many feel when having a panic attack anyway –so, it just makes things worse).

Oxygen (O₂) and CO₂ enter and exit the blood in the lower and peripheral areas of the lungs, through structures called alveoli, which contain tiny capillaries (blood vessels) where these gases are exchanged.

Muscles run on adenosine triphosphate (ATP) which basically means they use up O₂ (to make ATP) and they also produce CO₂ as a waste product (which we need to expel to stay alive).

Lung Anatomy

Bronchi, Bronchial Tree, and Lungs



Psychological and Behavioral Correlates of Anxiety/Stress

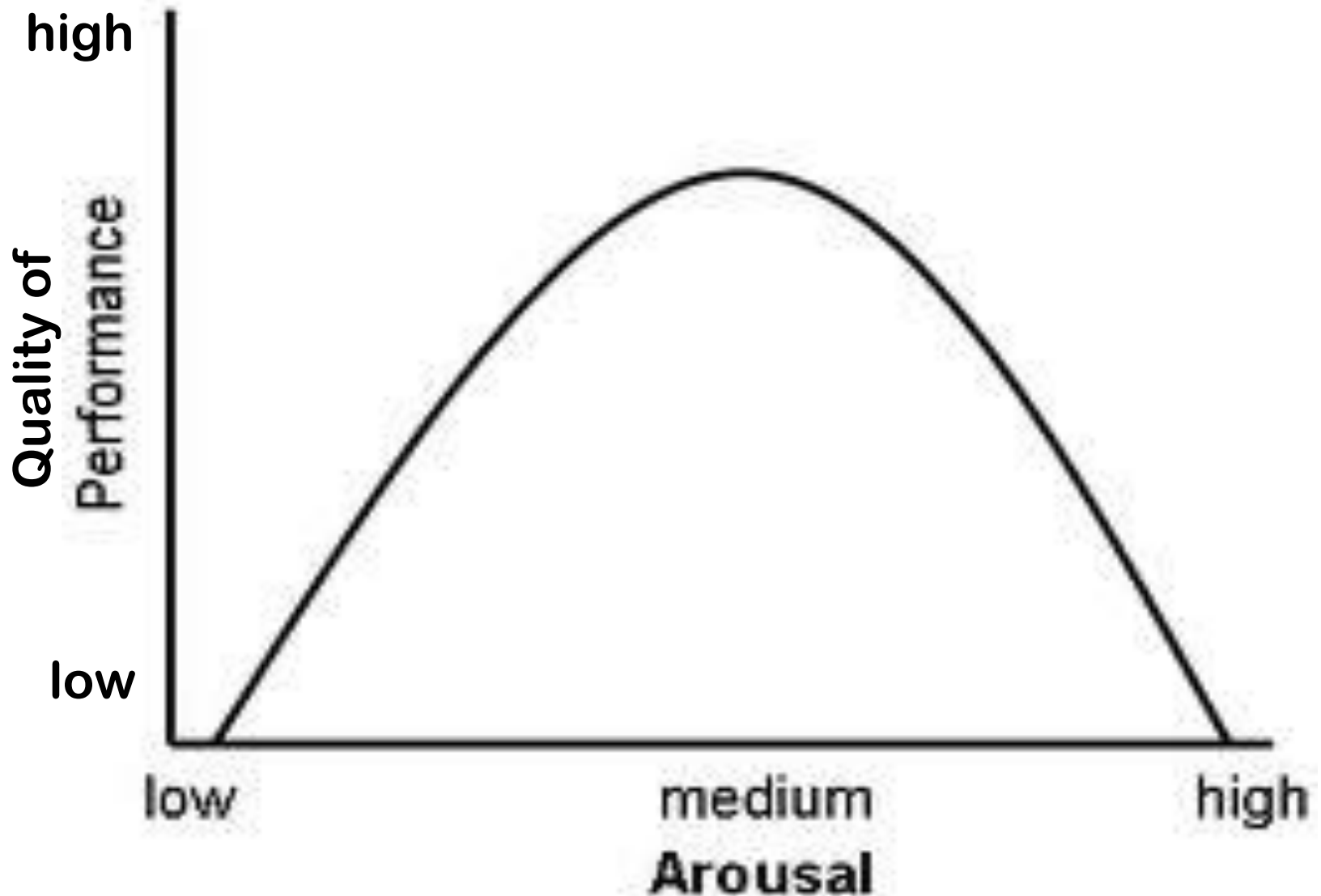
In terms of performance, high levels of anxiety (adrenaline) will create both physical (e.g., heart racing, difficulty breathing) and cognitive distractions (negative/catastrophic thoughts) that will likely distract from the task at hand.

For those tasks which are well-learned or easy, a moderate amount of arousal actually maximizes performance quality.

Low arousal means there's not much investment or energy devoted to the task, so consequently, it isn't usually done well.

So, the trick is to learn how to manage arousal/stress so that one keeps it at optimal levels while engaging in various tasks (public speaking, sports performances, taking tests, etc.).

Yerkes-Dodson Law of Arousal



Psychological and Behavioral Correlates of Anxiety/Panic

When you have an adrenaline rush in any type of situation, you become classically conditioned to potentially have an adrenaline release in any similar situations in the future.

In such cases, people are motivated to reduce the bad feelings and the easiest way to do that is to leave (flight). However, that is the basis of phobias, because when we don't stay in situations that cause anxiety but which are not actually threats, we do not extinguish (get rid of) the automatic adrenaline release. This can lead to a lifetime of avoiding situations that are not actually threatening.

Because you can't be deeply relaxed and anxious at the same time, when you feel anxiety but aren't actually in a threatening situation (or if it's a manageable threat like driving, flying, performing), you can negate the anxiety response by engaging in relaxation techniques.

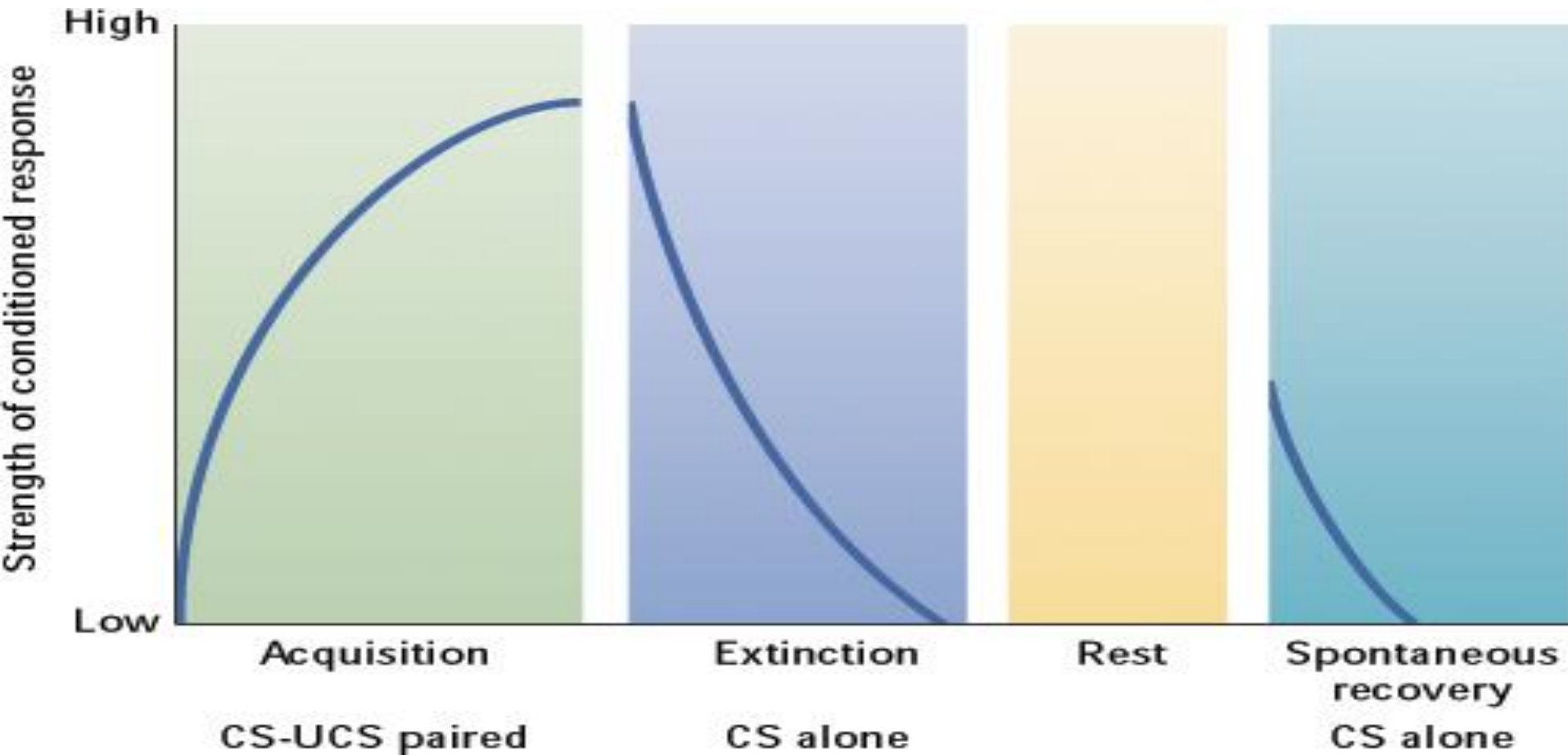
Relaxation is the basis of the effectiveness of several treatments for phobias, posttraumatic stress disorder, panic disorder, etc. If you feel you have these issues, you will want to find a cognitive-behavioral (CBT) therapist who understands systematic desensitization and exposure therapy.

Phases of Classical and Operant Conditioning

Acquisition- initial learning phase

Extinction- disappearance or weakening of a conditioned response

Spontaneous Recovery- reappearance of extinguished response after a period of stimulus absence (rest)



Do Relaxation Techniques Work?

How Many Practical Applications?

Researchers reviewing the literature concluded “...relaxation training proved to be a valid treatment option for many anxiety-related disorders and thus should be suggested to all people with anxiety-related complaints.” (Freancesco et al., 2010, p269).

Breathing techniques (alone and with other techniques) have been shown to help with panic attacks, pre-operative anxiety, test anxiety, stage fright, depression, sports performance, essential hypertension, angina, cardiac rehabilitation, asthma, chronic obstructive pulmonary disease (COPD), sleep quality, pain control, quality of life, and even typing skills! (e.g., Bjermer, 1999; Chung et al., 2010; Demiralp, Oflaz & Komurcu, 2010; Fouladbakhsh et al., 2011; Gilbert, 2003; Grewal, Tan & Sim, 1987; Hazlett-Stevens & Craske 2009; Matthews & Quinn, 1987; Paul, Elam & Verhulst, 2007; Ritz & Roth, 2003).

Edwards (2005, p30) said “Given the abundant evidence for their value and power in various forms and contexts, ***breathing skills may be regarded as the original method of survival, energy control, illness prevention, health promotion and improving quality of living.***”

Methods for Controlling Anxiety/Stress: Words of Caution

You have to master deep relaxation, which like any skill, takes lots and lots of practice, and you have to apply it in all anxiety producing situations and stay in those situations.

But,

- If you don't do them, they won't work.

- If you don't do them correctly, they won't work.

- If you don't do them long enough, they won't work.

- If you don't practice them, you won't think to use them when you need them.

However, if you do this reliably over time, your anxiety will become manageable, and possibly go away entirely.

Methods for Controlling Anxiety/Stress: Abdominal (DEEP) Breathing

“Breathing [in] through the nose...result[s] in greater efficiency of breathing and gas exchange, and...improve[s] inspired air by humidification, warming, and filtration for pollutants and allergens” (Bjermer, 1999, cited in Ritz & Roth, 2003, p724, who also say “These advantages are...important in asthma”).

Breathe in through the nose, very slowly, filling the lungs from the bottom to the top. (It isn't CRITICAL to breathe through the nose, but it helps you learn control and improves air quality).

Place one hand on your stomach and one hand on your chest, to gauge your breathing. The chest should remain relatively still as the stomach rises quite a bit.

Again, the bottom of the lungs is where gas exchange is most efficient. We have all learned to breathe into our upper lungs; again, you will want to change this dramatically.

Methods for Controlling Anxiety/Stress: Abdominal (DEEP) Breathing

Exhale through the mouth in a slow and controlled fashion for as long as (or longer than) your inhalation.

When you finish breathing out, pull inwards and upwards on your diaphragm (your abdomen) to expel the last bit of stale air. Stale air won't hurt you, but it is

Count a steady pace to yourself. Count to 5 breathing in, and hold for 2, then breathe out for a count of 6. Hold the air out for a count of 2.

Repeat the process over and over and over and over, etc. Practice as often as you can. For the first few weeks, try to devote 10 to 15 minutes a day to practicing –it is relaxing to do it when you go to bed.

Increase your counts by 1 each day as you practice, until you feel can breathe slowly, completely and comfortably.

Methods for Controlling Anxiety/Stress: Progressive Muscular Relaxation (PMR)

You know when you exercise muscles, they get tired (relaxed). So, consciously tensing muscles helps induce relaxation.

Start out with a few minutes of abdominal (deep) breathing. Get a very slow, solid rhythm going.

Think of each muscle group from toe to head (feet, calves, thighs, butt, stomach, lower/upper back, chest, shoulders, hands, wrists, forearms, upper arms, neck, face, head). Gauge the tension levels.

Concentrate on one group at a time (feet first, then calves, etc.; tense one group with every other breath –this is the progressive part) and tense the muscles tightly as you inhale (be gentle with the back if you've got problems with it!).

Hold the clenched muscles with the breath.

Methods for Controlling Anxiety/Stress: Progressive Muscular Relaxation (PMR)

Release the muscles as you release your breath and say to yourself “RELAX” (or any other specific word).

The word “relax” (or other specific word) will over time become a conditioned cue for you to almost automatically become conscious of your breathing and muscle tension.

Follow a stable pattern of breathing/muscle tensing.

Systematically tense and release each muscle group along with your breathing patterns. Do this all the way up the body to the head/face.

As you relax, you may feel sensations in your muscles (e.g., tingling, temperature or weight change) or see lights or spots of color after you tense the facial muscles around the eyes (don't tense too tightly). These are normal sensations and they will pass quickly.

Practice!

Relaxing at will is a skill! The more you practice the correct techniques, the better you'll get at achieving results!

This process takes time at first, so take the time to do it right.

Eventually you'll be able to just think the cue word and you'll feel your body respond.

Mind/body control can reduce your stress if you learn how to do it properly!

You can also see a therapist to learn more skills such as biofeedback, visualization, or self-hypnosis.

But, most people who take the learning and practice seriously find these two techniques to be very effective in managing acute, and ultimately long-term, anxiety/stress.

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