STRESS AND THE BRAIN: TIPS AND TOOLS TO KEEP YOU SANE

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1. Coram Consulting, LLC
   - Clinical Psychologist
2. Neuro/Rehab Psychology
   - Neuropsychological evaluation
   - (What?)
3. Rehabilitation Psychology
   - (Now What?)
Good Morning
Let the Stress Begin...
BRAIN FACTS

• Our most vital organ
  • Heartbeats and breathing
  • Personality and memory

• Contains more than 100 billion cells
  • Neurons (specialized cells)
    • Transmits electrical impulses to and from central nervous system
    • Sends signals to other cells at a rate of 200 MPH
HOW COMMON IS STRESS?

• Over 1/3 of adults report an increase in stress over the past year
• 24% of adults report extreme stress, (up from 18% the year before)
• FACT: Stress can be a detriment to overall health
• Can stress actually change the physiology of the brain?
  • Science says yes.
DEFINING STRESS

• NIMH (National Institute of Mental Health)
  • “The brain’s response to any demand.”
  • Not all stress is bad. It is simply a response.
  • How harmful it ultimately depends on its intensity, duration and treatment.

• Variety of forms:
  • A single, short-term event
  • Recurring conditions (“chronic” or “toxic” stress)
    • Can cause significant harm to our body and brain function
I'm a little stressed right now...

(just turn around and leave quietly and no one gets hurt.)

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LEADING CAUSES OF STRESS

- 2015 Stress in America survey
  - Money and Work (top 2 stressors for 8th year in a row)
  - Family responsibilities, personal health concerns, health problems affecting the family and the economy
- Women consistently struggle with more stress than men
- Millennials and Generation Xers deal with more stress than baby boomers
- Those who face discrimination (race, disability status or LGBT identification)
PHYSIOLOGICAL EFFECTS OF STRESS ON THE BRAIN

• Stress is a chain reaction
  • Stressful event → amygdala triggered → sends distress signal to hypothalamus

• Amygdala - controls emotional processing

• Hypothalamus - functions like a command center
  • Communicates with the rest of the body through the nervous system
  • Creates the energy to “Fight-or-Flight (increased heart rate, heightened senses, rapid breathing, rush of adrenaline.

• Hormone called cortisol is released
  • Restores energy lost in Fight-or-Flight

• When the stressful event is over, cortisol levels fall and the body returns to normal
Stressor

Amygdala (fight-or-flight)

Cortisol (restores)

Normal returns

Hypothalamus
EFFECTS OF STRESS ON THE BRAIN

• Stress itself is not problematic
  • Buildup of cortisol in the brain can have long-term effects
  • Chronic stress can lead to health problems.

• Healthy cortisol
  • In moderation is normal and healthy
  • Restores balance to the body after a stressor
  • Regulates blood sugar levels in cells and has utilitarian value in the
  • Helps the hippocampus (where memories are processed and stored)
EFFECTS OF CHRONIC (LONG-TERM) STRESS ON THE BRAIN

• Body makes more cortisol than it has a chance to release
• High levels (unhealthy) cortisol wears down the brain’s ability to function properly
• Disrupts synapse regulation → loss of social skills and avoids others
• Kills brain cells → reduces the size of the brain
• Shrinks the prefrontal cortex (brain area responsible for memory and learning)
• Increases the size of the amygdala → makes the brain more receptive to stress
  • Creates a “domino effect” that hard-wires pathways between the hippocampus and amygdala
  • Brain becomes predisposed to be in a constant state of fight-or-flight
EFFECTS OF STRESS ON THE BODY

• Impaired cognitive function
• Increased risk of heart disease
• High blood pressure and diabetes
• Other systems of the body stop working properly
  • Digestive, excretory and reproductive systems
  • Decreased immune system
  • Exacerbate already existing illnesses
PLASTICITY AND THE BRAIN: THE BODY’S RECOVERY SYSTEM

• Plasticity (also called neuroplasticity)
  • Describes the ways that neural pathways are able to re-form in the brain

• Pathways (ex: amygdala ↔ hippocampus) damaged by stress
  • Changes aren’t necessarily permanent

• Age = direct correlation with reversibility of stress-related damage
  • Young adults able to recover better
  • More difficult for older adults to regain or create new neural pathways
PLASTICITY AND THE BRAIN: 
THE BODY’S RECOVERY SYSTEM

• BUT... there are activities that combat stress’s impact on the brain!
  • Exercising regularly
  • Socializing with others
  • Finding purpose in life

• It can seem like stress is an inevitable part of life, but chronic stress can have real and significant consequences on the brain.

• Understanding these effects and how to combat them can help promote overall health.
“I'm afraid all that worrying about what's healthy to eat and drink has sent your cortisol levels sky high.”
CORTISOL

• The body's primary stress hormone
• Plays a role in many body functions
• Level of cortisol in the blood is usually higher in the morning and gradually decreases throughout the day.
• Cortisol also plays a role in:
  • Regulating the body's sleep-wake cycles
  • Managing how the body utilizes carbohydrates, fats, and proteins
  • Reducing inflammation
  • Controlling blood pressure
WHY IS HIGHER CORTISOL AN ISSUE?

• The body relies on effective communication between 3 parts of the body to release the correct amount of cortisol:
  • 1. Adrenal gland
  • 2. Pituitary gland
  • 3. Hypothalamus

• Between the 3 parts, they:
  • Produce cortisol when the body needs it and
  • Blocks cortisol when the levels need to drop back down.

• Both too much and too little cortisol can have an adverse effect on the body.
HIGH CORTISOL LEVEL SYMPTOMS

- Excess cortisol could result from a tumor or as a side effect of medications
- Too much cortisol can lead to Cushing's syndrome
  - high blood pressure
  - flushed face
  - muscle weakness
  - increased thirst
  - urinating more frequently
  - changes in mood, such as feeling irritable or low
LOW CORTISOL LEVEL SYMPTOMS

(TOO LITTLE CORTISOL COULD CAUSE ADDISON'S DISEASE)

- fatigue
- dizziness
- muscle weakness
- gradual weight loss
- changes in mood
- areas of the skin turning darker
- irregular or ceased menstrual cycle

- low blood pressure
- Osteoporosis
- Bruises or purple stretch marks
- rapid weight gain in the face and abdomen
- decreased sex drive
NATURAL WAYS TO LOWER CORTISOL

• If the brain and adrenal gland are communicating correctly, the body should be able to increase and decrease cortisol production as needed.

• Sometimes levels of cortisol can stay high even after the stressor is resolved.
Stress

Body
- headaches
- frequent infections
- taut muscles
- muscular twitches
- fatigue
- skin irritations
- breathlessness

Mind
- worrying
- muddled thinking
- impaired judgement
- nightmares
- indecisions
- negativity
- hasty decisions

Emotions
- loss of confidence
- more fussy
- irritability
- depression
- apathy
- alienation
- apprehension

Behavior
- accident prone
- loss of appetite
- loss of sex drive
- drinking more
- insomnia
- restlessness
- smoking more
12 TIPS TO MANAGE CORTISOL LEVELS
1. LOWERING STRESS

• Reduce stress to lower cortisol
• Remove yourself from stressful situations
• Learn how to cope with stress better
• Recognize triggers for stress and try to manage these proactively
• Some medications can help improve stress tolerance and lower cortisol levels if other strategies are not working
Stress Reduction Kit

Bang
Head
Here

Directions:
1. Place kit on FIRM surface.
2. Follow directions in circle of kit.
3. Repeat step 2 as necessary, or until unconscious.
4. If unconscious, cease stress reduction activity.
2. EATING A GOOD DIET

- Eat a healthful, balanced diet and pay attention to sugar intake
- Some foods that may help to keep cortisol levels stable include:
  - dark chocolate
  - bananas and pears
  - black or green tea
  - probiotics in food such as yogurt
  - probiotics in foods containing soluble fiber
- Drink plenty of water to avoid dehydration and keep cortisol levels lower
“If we pull this off, we’ll eat like kings.”
3. SLEEPING WELL

• Amount of sleep

• Sleep quality
  • A bad night's sleep or more prolonged sleep deprivation increases cortisol in the bloodstream
TRIVIA

Which U.S. president served the shortest time in office?
William Henry Harrison
(He served as president for just 31 days)
4. MAINTAINING A GOOD BEDTIME ROUTINE

• A good bedtime routine leads to longer and higher-quality sleep
• Turn off all screens one hour before bed
• Limit fluid intake before bedtime
• Create a cool, dark space
• White noise
• Relaxation strategies
"Bedtime, Leroy. Here comes your animal blanket."
5. TRYING RELAXATION TECHNIQUES

• Experiment with relaxation techniques
• Meditation
• Mindfulness
• Simple breathing exercises
• Progressive muscle relaxation
• Guided imagery
FINGER FAN

Extend your arms straight out in front of you with palms up. Spread your fingers as far apart as possible and hold for 5 seconds.
6. TAKING UP A HOBBY

• Hobbies can lead to an increased sense of well-being
  • Gardening
  • Walking
  • Fishing
  • Reading
  • Puzzles
  • Coloring
What kind of person shall not be honored on a US postal stamp, according to the US Postal Service?
A living person
7. LEARNING TO UNWIND

• People unwind in different ways, so understanding what works for YOU is important
As you’re sitting quietly with your feet flat on the floor and your hands resting in your lap, recall the most relaxing image you can. Perhaps it’s a favorite place, a vacation spot or a person with whom you feel at peace. Take a few seconds to get the image in your mind. Now, focus on the image. Feel the good feelings you have when you are in that place. If your thoughts wander, keep bringing them gently back to that peaceful, place.

After 5 minutes, slowly activate yourself by breathing a little more deeply, wiggling your fingers and toes, and opening your eyes when you are ready.
8. LAUGHING AND HAVING FUN

• It’s hard to feel stressed when having a good time, so finding time to have fun will lower your cortisol levels
  • Studies show laughter decreases cortisol levels

• Positive attitude
  • Thought stopping
  • Focus on meaningful moments
Testing whether laughter IS the best medicine
9. EXERCISING

- Being physically active can improve a person's mood

- Intense exercise can trigger an increase in cortisol levels
  - The body's way of coping with the additional stress that the exercise places upon it

- The amount of cortisol released during exercise depends on various factors
  - A person's physical fitness
  - Type of exercise
  - Duration of exercise
Lower your right ear to your right shoulder and hold for 10 seconds. Repeat on other side.
10. AVOIDING CAFFEINE AT NIGHT

• Avoid food and beverages containing caffeine in the evening
• Caffeine can interfere with a good night's sleep
• Sleeping well can keep cortisol levels low
Who was the first baseball player to have his number retired?
11. HAVING GOOD RELATIONSHIPS

• Stable, loving relationships with partners, friends, and family are vital

• If relationships are unhappy and unhealthy, it can increase stress

• Cortisol levels can rise after an argument with a partner.

• A study found that children with a happy and secure family life have lower levels of cortisol than those living in homes where there is regular conflict

• Learn how to address conflict in healthy ways
12. GETTING A PET

• Some studies suggest that having a pet can lower cortisol levels.

• One study measured levels of cortisol in children undergoing a standard medical procedure. Those who had a dog present during the procedure had lower cortisol levels than those who did not.

• Another study found that contact with a dog was more beneficial for cortisol levels than a supportive friend during a stressful situation.
IN A WORLD OF COVID-19

• Understand that your cortisol levels are likely running a little higher (baseline)
  • NEED TO BE EVEN MORE FOCUSED ON REDUCING STRESS!

• Find alternative ways to connect
  • Use technology to stay in regular contact with others

• Shut off the news!
  • Surround yourself with positive things (neuroplasticity)

• Be a “Yes, and…” person when dealing with conflict/opposing views
TAKEAWAYS
TAKEAWAY

• Having too much cortisol in the blood can be damaging to health, particularly if cortisol levels are high over an extended period of time.

• Trying to lower stress levels is the best way to lower cortisol.

• Make simple lifestyle changes to live a healthier, more active life, and keep your cortisol hormone levels stable.

• Puppies, dark chocolate, and sleep are all good things!
CONTACT ME!

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