ACUTE VS. CHRONIC STRESS

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There are two kinds of stress, each with different effects on the mind and body:

Acute stress

This is stress resulting from specific events or situations that involve novelty, unpredictability, a threat to the ego, and leave us with a poor sense of control N.U.T.S. This 'on the spot' type of stress can be good for you because the stress hormones released help your mind and body to deal with the situation.

i.e.: Almost getting into a car accident or giving a speech in front of people. You feel your heart beat in your throat, you become hyper aware of everything around you, and feel pumped. These are signs that your stress hormones are hard at work!

Chronic stress

This is stress resulting from repeated exposure to situations that lead to the release of stress hormones. This type of stress can cause wear and tear on your mind and body. Many scientists think that our stress response system was not designed to be constantly activated. This overuse may contribute to the breakdown of many bodily systems.

TIPS

Chronic stress brings us close to the edge of a cliff and our predispositions (e.g. genetics and/or lifestyles) can push us over. We call this the bulldozer effect!

In fact, chronic stress has been linked to heart disease, high blood pressure, high cholesterol, type II diabetes, and depression. But the effects of chronic stress are worst for people at risk for developing these and other problems. For instance, if one has a family history of heart disease, diabetes, high blood pressure, or has unhealthy lifestyle habits, then chronic stress can flip the switch that turns on these health problems.

When the stress response system is activated, this automatically affects other systems.

i.e.: Increasing our heart rate, blood pressure, blood sugar levels, and decreasing our immune responses.

If the stress response system goes out of whack, then other body systems like blood pressure and blood sugar stay in fight or flight mode. In essence, chronic stress causes our bodily systems to deregulate. We call this a domino effect. If the first one falls, then the others will soon follow.

Take-home message
There are two kinds of stress. Acute stress is a normal part of everyday life and helps our stress response system stay on the ball. Problems arise when we are repeatedly exposed to the same stressor of many different stressors for an extended period of time. When this happens, we can fall prey to the effects of chronic stress. But how does this all start? How do I know that I am under chronic stress

Close-up on... chronic stress

Cardiovascular Function and Salt

The stress hormone cortisol helps to regulate the balance of salt and water in our body. This is essential because too much or too little salt can affect the normal functioning of our heart. The electrical currents that stimulate our heartbeat and the functioning of our heart are highly dependent upon salt (sodium) levels.

You have surely noticed that your sweat is a little salty. We lose salt when we sweat. This is his why drinks like Gatorade® have salt in them. If our sodium levels become too low, then cortisol stimulates a craving for salt.

i.e.: Pizza after moving day really hits the spot!

Cardiovascular Function and Water

Our body is mostly made of water; the range is between 55% in women to 65% water in men. Our blood is fluid because of this water content. The amount of water present contributes to what is known as blood volume.

Blood volume is directly related to blood pressure. Higher blood volume means higher blood pressure. A lot of water makes the heart work harder. This is why certain blood pressure medications (e.g. diuretics) are designed to reduce the amount of water in the system. Less water means lower blood pressure.

TAKE HOME MESSAGE
A big problem in today's world is that we often do not use up the energy we consume. When we were mammoth hunters, we ran like crazy and used up the energy. But today, the stress response system secretes stress hormones when we are stuck in traffic or sitting at our desk at work. Why do we speak about mammoth hunters?

If everyday levels of stress hormones are high then the delicate salt/water balance that keeps our heart working normally can be disrupted. In the long-run, this can lead to cardiovascular disease.

Cholesterol

Stress can also indirectly lead to high cholesterol levels. Repeated exposure to stress often leads to unhealthy lifestyles.

i.e.: Eating a diet high in saturated fats, weight gain, increased tobacco and alcohol intake, and decreased physical activity.

These habits all raise the levels of low density lipoprotein (LDL), or bad cholesterol and decrease levels of high density lipoprotein (HDL), or good cholesterol. But lifestyle alone does not explain the whole picture.

The stress hormone cortisol has to be made or synthesized. The first ingredient of cortisol is cholesterol. When exposed to chronic stress, cholesterol levels increase to make more cortisol. But not all cholesterol becomes cortisol! People at risk of developing high cholesterol (e.g. family history) with unhealthy lifestyle and who are chronically stressed are at greatest risk of health problems.

Insulin Resistance and Type II Diabetes

Insulin is a hormone that carries a message that lowers blood sugar levels and helps us to store energy for future use.

The receivers of messages in our body are called receptors. In type II diabetes, the message carried by insulin is not understood by the receptors and blood sugar levels remain high.

Normally, when cortisol levels rise, insulin secretion stops. After all, we need all the energy we can get! Sugar fuels our muscles and brain. So with lower levels of insulin, blood sugar levels can remain high enough to provide us with the energy we need. Our stress response system has a fail-safe just in case we still have insulin kicking around. Stress hormones make sure that our cells do not respond to any remaining insulin in our system.

If we are chronically stressed, then our insulin levels can remain low and our blood sugar levels can remain high. On top of that, our cells can become almost totally resistant to insulin.

Truncal Obesity

Cortisol first and foremost maintains energy balance. When we expend energy (i.e. use up calories), our body needs to replace the energy lost. Cortisol carries this message: refuel!

Now, the brain and cortisol are always out to protect us. When we are chronically stressed they will 'help us out' by making it easier to get at our stored fuel (i.e. our fat tissue). So they begin storing energy in easy-access areas, such as our gut or trunk. The end result is **truncal obesity** or fat around our midsection.

The unfortunate thing is that our brain and stress response system do not know the difference and take for granted that we have used up the energy. Our brains have not changed much since we were hunter-gathers chasing mammoths, so we react similarly to the stressors of the modern world!

These are but a few examples of how stress hormones are vital to our health. The take home message here is that our body and brain maintain their normal functioning (**homeostasis**) through the delicate and precise interactions between many systems.

The stress response system and its end product cortisol are key players in these interactions. When the cortisol system becomes deregulated, it affects all other systems that depend on its integrity to function.