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WHAT
IS STRESS?

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FOREWORD

Stress is an unavoidable part of life. In fact, when working as intended, your stress response can be helpful, even lifesaving. It can get you out of a bind with incredible agility, sharpen your awareness or concentration, or even help you complete a worthwhile exercise session.

As a professor of biology, I've always understood, however, that what can be helpful in small doses can be extremely harmful in large or persistent ones.

More specifically, we are well designed to respond to short, acute stresses - to run from the proverbial tiger in the jungle - and then get on with our lives.

What we are not designed for is chronic stress - being constantly chased by tigers (or in our case, deadlines, hostile environments, economic woes, personal conflicts … the list goes on). In fact, our modern world affords us the opportunity to be stressed on an almost constant basis. Physiologically and psychologically, this is not an outcome we can afford to indulge.

The scientific evidence is abundant and persuasive. Living life in the shadow of persistent stress is not a recipe for either health or happiness.

But there is good news. Persistent stress doesn't have to be accepted as an unavoidable consequence of the 21st century.

This program not only explains what stress is and why it's important to understand, it also offers some simple and effective tools to help you start doing something about it.

Life's stresses are not going away, but engaging with this module can provide the knowledge, the resolve, and the skill to help you to respond to them in a different way. Changing the way you think about and deal with stress can be life changing. This program is an invaluable resource towards achieving this goal.

Ward Brady, Ph.D.
Professor Emeritus

Dr. Brady has dedicated much of his distinguished academic career to the area of biological sciences. He spent thirty-eight years as a professor at the Arizona State University where he served as the founding chair of the Department of Applied Biological Sciences.

WHAT IS STRESS?

It falls so easily from the tongue. “Stress” ... a small word of such familiarity that it almost sounds harmless. An old foe we accept as a part of our lives, often without question.

Perhaps this familiarity is why so many of us accept living with stress, absorbing its daily assault on our wellbeing.

It’s time a bright light was cast on this little word and the power it has to rob us of our vitality, and ultimately our health.

We’re ready to go if you are, so take a ‘deep breath’ and let’s jump right in.

No seriously ... give it a go!

Take a nice full gentle breath in through your nose, then relax as you let it out.

Go on. Try it again. Close your eyes and do it a couple more times. Take a full breath of air into your lungs, and then relax as you let it out gently.

Great. If you’re still with us, here’s some good news. You’ve got what it takes to reduce your stress. Hey, perhaps you’re even feeling a little calmer already.

So, let’s begin.

As with any major issue, understanding stress is the first step to gaining control over it.

In this section of the module, we're going to discuss:

- What stress is, and what stress isn't
- The purpose of stress
- The way your stress response actually works

But first, let's begin with a little scenario that some of you will find rather familiar.

It's morning and you're struggling to get moving ... again! Your compulsory espresso kicks in banishing the haze of a restless sleep. A racing heart and quick breath accompany you to the car, bus or train. Good morning world!

But wait, there's more. Traffic, train delays, a guy coughing up a lung sits down next to you. Perhaps you've had breakfast, or perhaps it'll wait until you get to work ... but only after you've cleared your desk, sorted your email, and checked to see if you've managed to beat the boss in for the first time this month.

There's a stain on your shirt, you've left your diary at home, and here comes that guy who won't leave your desk until he tells you how much he hates his job. Yes, the very same story he cornered you with on Friday!

Just five more days until the weekend! Your head starts to pound and it's not yet 9:00 a.m.

How many 'stressful situations' can a person deal with?

But wait...

Sitting behind you on the train, or beside you on the freeway, someone else is heading to work. They also share the burden of the traffic or train delays, face similar challenges when they get to work and may also be wearing traces of this morning's breakfast. Yet there they sit. Calm and quiet. Smiling as they stare out the window at the sun reflecting off the morning dew.

Seriously. Don't you just hate those people? They should have the morning you've just had.

Well, hang on a minute. In fact they have.

Their start to the day has almost perfectly mirrored yours. They have faced the same challenges, have similar prospects ahead of them and have navigated the same streets to their destination, yet there they sit, calm and relaxed.

There's a lesson, of course, in this little story and it can be summed up in a single sentence.

There is no such thing as a stressful situation. Only a stressful reaction.

- The traffic isn't stressful, your response to it is.
- Your office isn't stressful, your response to it is.
- Your kids aren't stressful, your response to their behaviour sometimes is.

This is not splitting hairs. It's fundamental. Stress is not attached to a situation but your internal response to it.

In no way are we trying to diminish the weight of the stresses we often bear. Our responses to them are only too real. But appreciating that they are actually our responses rather than an external reality is perhaps the major takeaway of this section.

Let's consider another situation while we're at it.

You're at a wedding about to give a speech with Phil, one of your friends in the bridal party. Your palms are sweaty, your heart is racing, your mouth's as dry as the Gobi desert. Phil, meanwhile, is next to you smiling from ear to ear, chatting to the groom as you walk to the front of the room together.

You're both faced with the same scenario, but your responses to it are worlds apart.

The situation can't be inherently stressful. If it were, Phil would also be a sweaty trembling mess.

Stress is not just floating around in the air. It is your body's INTERNAL response to a perceived threat.

The stress response is a 'red alert' signal from the brain. A warning that your safety or wellbeing may be at risk.

Whether the danger is immediate and physical:

- Running from an attacker
- Avoiding a falling branch

Or emotional and abstract:

- Speaking in front of people when you're not used to it
- Waiting for your test results

... your body gets the message that your wellbeing may potentially be under threat. As such, the first priority of the stress response is to make sure your body is primed to defend itself.

The stress response is powerful, single-minded and somewhat inflexible.

- The capacity of the stress response to change your physical state is impressive. So is the speed with which it acts.
- You can go from relaxing in a chair listening to the rain, to tearing wide-eyed down the hallway before the thunder crack has even subsided.
- It is a powerful, yet somewhat inflexible tool of self-defence.

When the stress alert sounds in your brain, your body gets a clear and immediate message from upstairs.

"Prepare for FIGHT or FLIGHT"

That's right. Get ready to stand your ground or run for your life.

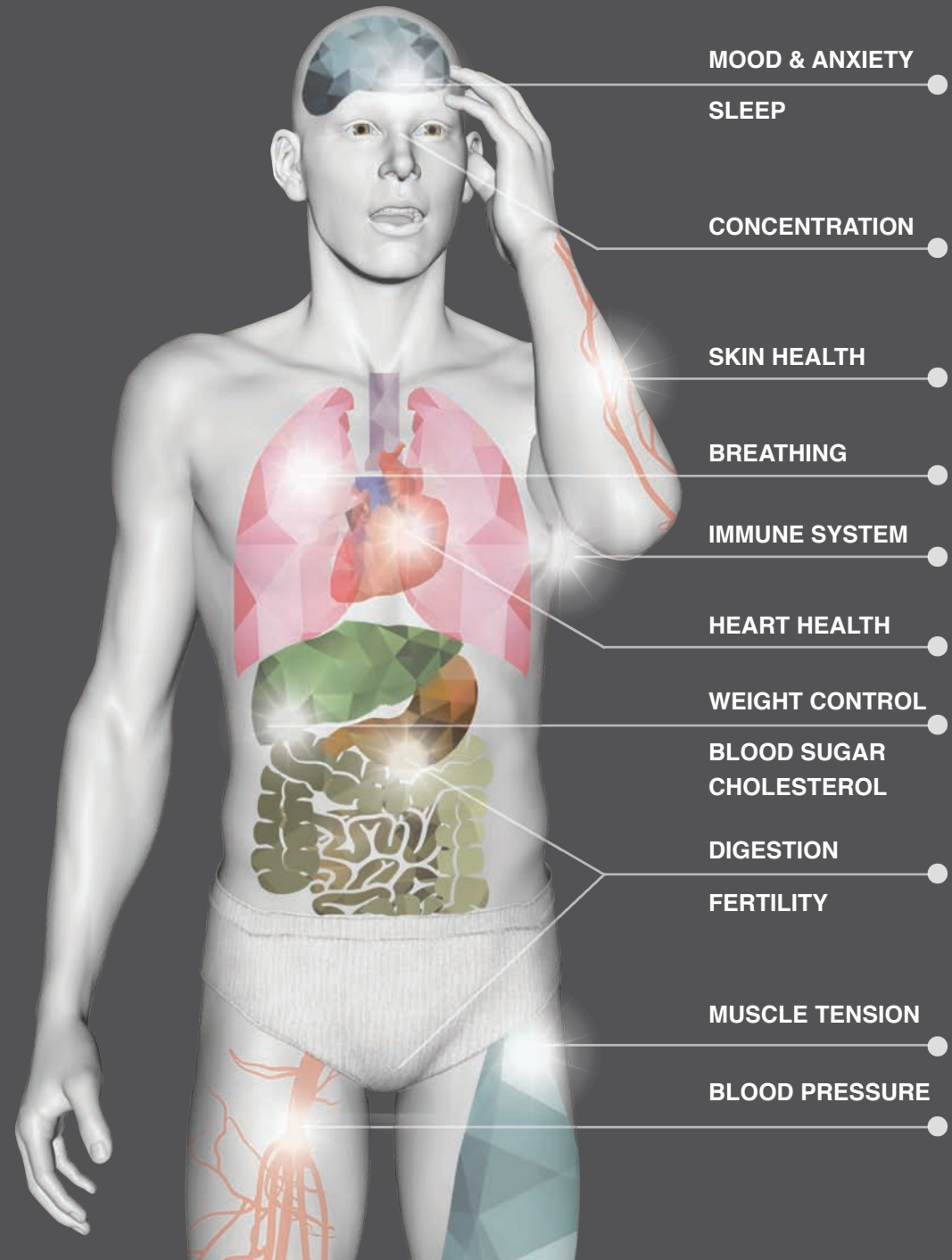
In just moments:

- Heart rate and breathing increase,
- Blood sugar spikes to increase available energy
- You start to sweat in anticipation of needing to cool down
- Digestive and reproductive systems are put on ice to save energy
- Thinking shifts from logical and balanced to reactive and defensive
- Blood is diverted to your muscles from your organs and extremities

The diagram on the next page lists just some of the systems and processes that are affected by the stress response.

THE STRESS RESPONSE

AFFECTS MOST SYSTEMS IN YOUR BODY



It is only in very recent human history that the nature of threats we face has significantly changed. Aggressive physical responses preparing us for 'battle' are now rarely appropriate or useful.

- Today's threats are often better described as challenges. While still very real, they are more emotional, abstract and **persistent** than those our ancestors faced.
- The prospect of losing your job, for example, is certainly a worthy concern. But starting to sweat, increasing your blood pressure and dilating your pupils is hardly going to help you avoid it.
- Passing an exam may be crucial, but halting your digestion, not being able to sleep and directing thoughts from logical to reactive is going to hurt, not help you in your endeavours.

Our ancestors didn't have to apply for jobs or write exams. The speed and power of our stress response developed to protect us from physical threats and was designed to be implemented in short, intense bursts. This type of response was frequently required 'back in the day'.

- Hunting for food
- Challenging for rank in the tribe
- Physical competition for mating rights
- Running from predators
- Defending territory

But these days, many of the challenges we encounter are of a profoundly different nature.

- Job security
- Mortgage and bills
- Information overload
- Time constraints and deadlines
- Dealing with frequent and rapid change

Over countless generations, we've learned to respond to threats to our wellbeing in a certain way. Even though very few of the challenges we encounter these days require a robust physical response, our bodies are hardwired to prepare us for one when we feel threatened.

This can be particularly problematic as we try to navigate life in the 21st century.

We live in a wonderful but noisy and uncertain world. On a sub-conscious level, the brain is constantly trying to interpret what all the 'fuss' is about and whether it may represent something dangerous to us. The result is that our minds can become stuck in a state of 'red alert,' causing us to subconsciously mistake rather simple challenges for potential threats to our physical wellbeing.

A telemarketer calling you during dinner doesn't pose the same threat as a hungry sabre-tooth tiger but your body will respond to both situations in a surprisingly similar way.

With the huge range of potential challenges that surround you each day, a mind stuck in 'red alert' may have your body primed in stress mode on an alarmingly frequent basis. The problem is, we weren't designed to operate this way.

Stress is not always bad. At the right level and moment, it can, in fact, be rather useful and enjoyable.

In short bursts, its performance is beautifully adapted to look after you and your wellbeing.

- Helps you respond quickly to imminent physical danger
- Fuels short-term awareness and excitement
- Directs and engages attention to process problems
- Improves responsiveness and can focus attention

But, your stress response is a born sprinter not a marathon runner.

It's when this 'sprinters response' is asked to run long, grueling distances that it can become overloaded, dysfunctional and the cause of, rather than solution to, our problems.

When we talk about stress in this module, it is mostly this persistent and unwelcome kind to which we are referring. It's the kind that poses a significant threat to our vitality, health and wellbeing.

Scientific journals are now littered with detailed studies that link persistent stress with long-term health issues.

Researchers at Penn State University, to pick one, assessed 2,000 individuals over a ten-year period. The team found that subjects who responded in a more stressful way to general daily challenges (high stress responders) were more likely to suffer from serious health problems ten years later. [1]

In short, those subjects who spent more time swimming in a sea of stress hormones were more likely to lose their health in the future.

It's true that some of us are generally more prone to stress than others, but in the long-term, 'less is more' is likely to be a reality that applies strongly to us all.

PHYSIOLOGY OF STRESS

We've been tough on stress, because it's tough on you. But we need to give credit where credit is due. The human stress response is a stunning piece of design. It's mostly when we overload it, often unnecessarily, that it causes us problems.

The diagram on the following page is a basic representation of stress's pathway from a subconscious perception of danger in the brain to the physical manifestations of 'fight and flight.'

You don't need to remember the detailed science, but having a basic understanding of the processes that cause your heart to race and your stomach to churn when you are under pressure, is helpful.

STRESS HORMONE SYSTEM ACTIVATED

SLOWER AND ENDURING PROCESS

- The brain (Hypothalamus) sends a messenger (CRH) to the Pituitary Gland, which in turn signals (ACTH) the Adrenal Gland.
- This stress pathway is known as the HPA axis and results in the release and regulation of cortisol and other stress hormones.

NERVOUS SYSTEM ACTIVATED

IMMEDIATE AND SHORT LIVED RESPONSE

- The brain messages the Adrenal Gland via the nervous system to produce the stress hormones. adrenaline and noradrenaline
- Immediate neural responses also act to increase heart and breathing rates.

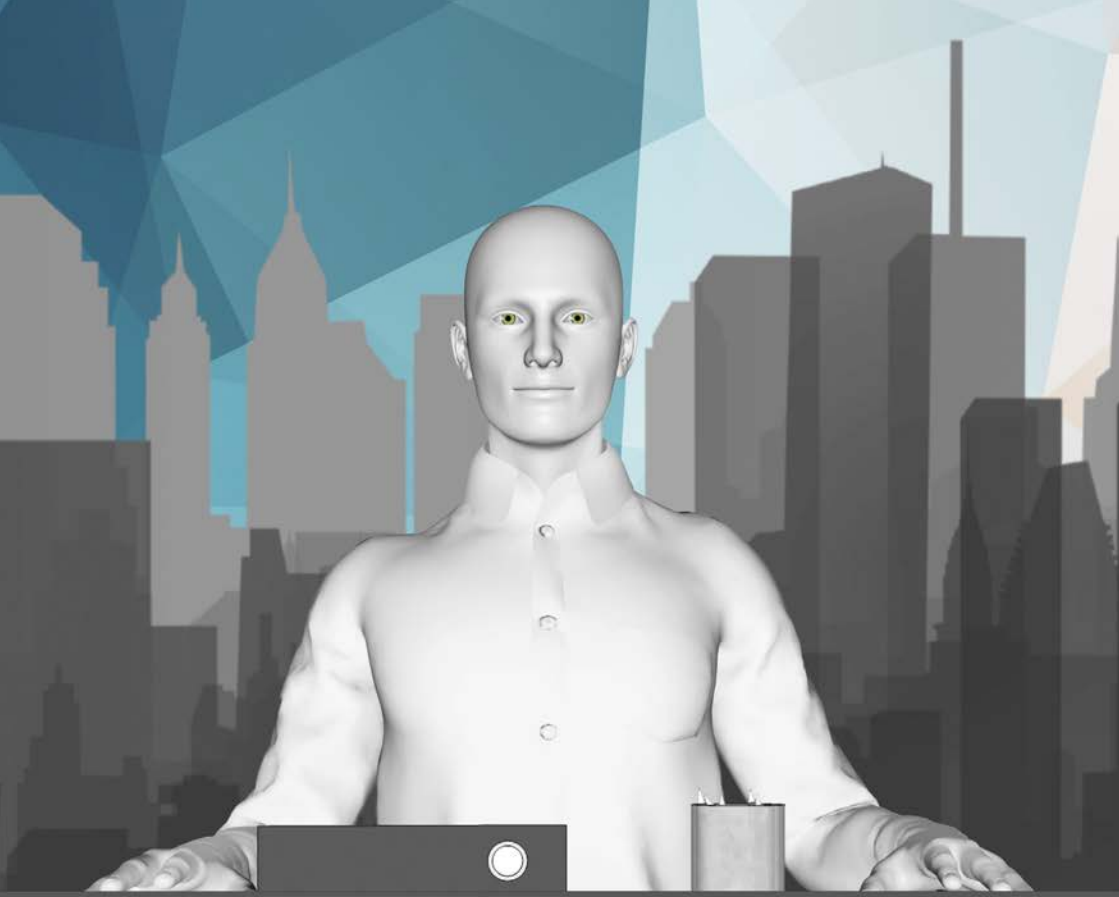
FIGHT OR FLIGHT

When engaged, the stress response is dominant, often at the expense of key functions related to repair, re-balance and regeneration.

When you're in a calm and relaxed state, your body is designed to respond in a different, yet equally impressive way. In this state, the body switches its considerable talents to the complex maintenance required to keep your systems thriving. In fact, you would be surprised at how well it can look after itself if given half a chance. When your body is running efficiently, it skillfully regulates countless processes that help keep you calm, healthy and happy.

The stress response, however, possesses a kill switch for many of these critical processes. Leaving that switch engaged for extended periods compromises your body's efficiency and can have far-reaching consequences for your health and vitality.

The following pages show the processes and responses encouraged in a calm and stressed state respectively.



- CLEAR AND LOGICAL THOUGHT PROCESS
- STRONG IMMUNE SYSTEM
- POSITIVE MOOD AND OUTLOOK
- EFFICIENT DIGESTION
- BALANCED BIOCHEMISTRY
- EFFICIENT CELL FUNCTION
- RESTFUL SLEEP

- REACTIVE MENTAL STATE - SHORT TEMPER
- LOGICAL THOUGHT PROCESS SUSPENDED
- ELEVATED BLOOD PRESSURE
- MUSCLE TENSION AND HEADACHES
- HIGH ENERGY PRODUCTION - LOW CONSUMPTION
- HYPERVENTILATION AND UNBALANCED BIOCHEMISTRY
- INTERRUPTED SLEEP PATTERNS

The benefits of lifting the burden of stress from your system can be profound, and we're glad you have decided to explore them with us.

The next E-Booklet in this "Detail" section entitled **WHY STRESS MATTERS** will run through some of the main health benefits of reducing stress as well as the risks associated with ignoring it. You may recognise some issues here that you are already dealing with.

As you read on, the link between a calmer, clearer mind and a more balanced and vital body should continue to emerge.

References

1 Penn State University News. (November 2 2012). Reactions to everyday stressors predict future health. Retrieved October 23 2013, from http://news.psu.edu/story/144952/2012/11/02/reactions-everyday-stressors-predict-future-health

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