

Mindfulness

BACKGROUND INFORMATION

The Importance of Mindfulness



Lifestyle and Mindfulness Background

The mind plays an important role in your overall health. Ultimately, the mind controls many of the fundamental processes critical to internal health. Our goal is to help you learn how to harness and build some of the mental skills that will allow you to get the most benefit from our lifestyle modification recommendations. Lifestyle encompasses exercise, nutrition, stress management, sleep, and mindfulness. The information below explains these interactions and provides you with practical ways in which to make positive change.

The Gut-Brain Axis

The gut-brain axis (GBA) has recently gained more attention due to its emerging importance in health. The GBA is a complex set of interconnected pathways that link the gut to the nervous system. It is now clear that the brain receives continual messages from the gut, processes this information along with information received from the environment, and then sends messages back to the gut.

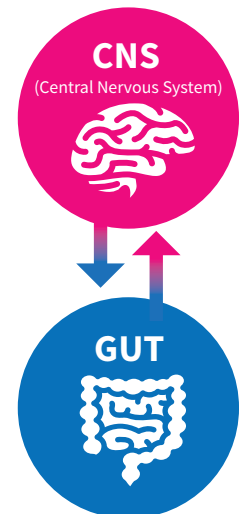
For most people, these messages are undetectable. However, for people with gut disorders, this communication can result in recurrent discomfort such as that experienced with irritable bowel syndrome (IBS), autoimmune-related changes in celiac disease, and the inflammation associated with inflammatory bowel disease (e.g., Crohn's disease and ulcerative colitis)⁵⁴. These are just a few examples of gut dysbiosis. The consequences are very similar, with the result being significant negative psychological and social dysfunction. This all results in a negative impact on an individual's life.

Regardless of whether you are affected by a GI disorder, the GBA plays an important role in your health. A growing body of evidence supports the concept that gut microbiota influences emotional behavior along with cognition, and that its products (metabolites) promote metabolic effects such as reduced body weight, reduced adiposity, and improved glucose control^{55, 56}.

HOW THE GUT AND BRAIN ARE CONNECTED

Neural Communication

Vagus, DRG, ENS-Sympathetic, Parasympathetic



Bacterial Factors, Cytokines, Hormones

Humoral Communication

† Before starting any supplement, dietary, or exercise program, including this one, you should consult your doctor.

How Your Mind Impacts Your Gut Health



Emotional Behavior and Cognition (Memory & Learning)

Emotional behavior and cognition can be influenced by the gut through serotonin, tryptophan, and kynurenine. A lesser-known fact is that serotonin is produced primarily in the gut, not in the brain^{56,57}. Tryptophan is the main precursor of serotonin.

Tryptophan is an essential amino acid found in many protein-based foods and dietary proteins including meats, dairy, fruits, and seeds.⁵⁸ Tryptophan has been shown to have a direct effect on sleep quality, producing an increase in rated subjective sleepiness, and a decrease in total wakefulness. This improved quality of sleep is associated with an improvement in cognitive acuity, improved morning alertness, and improved attention span.⁵⁹⁻⁶¹ If an individual's tryptophan levels are low, it is important to follow the dietary and sleep hygiene recommendations to increase this particular metabolite.

Another interesting and recent discovery about our gut has revealed that bacteria play a role in our cravings for particular foods. The foods we eat provide certain bacteria with specific fuel that they require. These foods can either enhance the growth of specific bacterial species or suppress their competition. This explains why we get uncontrollable urges to eat certain foods that we are used to eating— whether they are good for us or not. The exciting news for you is that your gut bacteria are easily manipulated through prebiotics (indigestible fibers), probiotics, exercise, and alterations to your diet. It is important to remember that you are ultimately in control of your gut bacteria.^{62,63}

Meditation

It is now widely recognized that stress can adversely affect your gut microbiome. Normal, healthy gut bacteria produce molecules called *short-chain fatty acids* (SCFAs) that exert anti-inflammatory and anti-tumor effects on the body. When chronic stress is exerted on the body, it results in an altered gut function that affects the regulation of these molecules. Evidence now supports meditation/yoga as a means to regulate this stress response and assist in suppressing chronic inflammation.^{64,65} If we have recommended meditation as part of your program, we suggest starting with ten minutes every day. You may find it useful to use an app to guide you through the practice too. We recommend the apps Holistrio, Headspace, or Simply Being. It is important to remember that it is called *meditation practice* and not *meditation perfect* because it is all about improving. It may seem awkward at first, but stick with it!

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How Sleep Affects Your Overall Health



How Sleep Impacts Your Performance

It is universally recognized that sleep affects your ability to function. If you own a wearable device that monitors sleep, you are aware of how important sleep duration and quality is. These devices can help to identify potential issues. However, you don't need to own a device to start making basic improvements to your sleep hygiene. Below, we provide some information about sleep and ways to improve your sleep quality.

The amount of sleep gained versus sleep lost can affect your physiological function, your psychological state, and your cognition. There is no way to “store” sleep for later use. The demand for your career, family life, sport, and lifestyle will determine the impact lack of sleep has on your life.

NEGATIVE EFFECTS OF LACK OF SLEEP	POSITIVE EFFECTS OF IMPROVING SLEEP HYGIENE
Gut microbiota changes with repeated sleep deprivation episodes. ⁶⁶ There is a cognitive disadvantage to continual reduced sleep.	Studies show individuals who experienced increased quality and quantity of sleep exhibited significantly Improved decision-making skills, such as reaction time and accuracy.
Carbohydrate oxidation is reduced, which affects your energy efficiency.	Improved physiological and hormone regulation means improved performance!
Your mood is negatively affected, resulting in irritability.	Improved mood will work wonders on family and work relationships.
Anabolic hormones testosterone and IGH-1 decrease. This is not good because decrease in testosterone and IGH-1 is linked to lower energy, poor concentration, fatigue, and decreased strength.	Decreasing levels of cortisol will lessen your chance of getting upper respiratory tract infections.
Catabolic hormones cortisol and corticosteroids increase. This is not good because it can lead to additional inflammation as well as an increase in blood glucose levels. Chronically elevated cortisol levels have been linked to problems including abdominal fat gain, cognitive decline, and compromised immune function.	Improved immunity to illnesses.
Continual reduction of sleep impairs recovery over time.	

Lack of sleep will have a cumulative effect on performance. It may not happen immediately, but over time it will impact you, your health, and your quality of life.

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Sleep Hygiene Recommendations



Practical Solutions for Improved Sleep

ROOM SETUP	DIGITAL MANAGEMENT	LIFESTYLE HABITS
<p>Use “black out” blinds or shutters or sleep with a face mask.</p> <p>Keep room cool—64° – 69° F (17.8° – 20.6° C).</p> <p>Change/wash sheets every week.</p> <p>Use cotton sheets and pillowcases.</p> <p>Use pillows that support the head and neck.</p>	<p>Remove the phone and other electronic devices from the bedroom.</p> <p>If you have a TV in the bedroom, turn it off completely. (Don’t just put it in sleep mode.)</p> <p>Avoid checking emails within 2 hours of getting into bed.</p>	<p>Avoid alcohol in the evening. (It increases your resting heart rate.)</p> <p>Go to bed at the same time and wake up at the same time every day.</p> <p>Read a real book for at least 30 minutes prior to sleeping.</p> <p>Meditate. Try the apps Holistrio, Headspace, or Simply Being.</p>

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* These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure, or prevent any disease.