Power of 1 Wellness News

Newsletter 12 \triangle December 01, 2020

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Wellness Word -

As we approach the conclusion of 2020 it is impossible not to reflect on what a shockingly unconvential, unpredictable, and unforgettable year it has turned out to be. Rarely does such a short period of time encompass the depth and breadth of change we have seen unfold right before our eyes with divisory threats ranging from supernumerary environmental disasters, to a deadly wide-ranging pandemic, to ongoing political tumult and social unrest.

Most remarkably, many of the challenges which have overturned our typical priorities and upended every aspect of our cultural norms have been mirrored and echoed from every corner of the globe, without exclusion. Never have all the interacting spheres of wellness between our health and inflammation/disease, our health and the environment, our health and the food

with other people been more starkly or prominently displayed as they have by the lives we have led during the year of 2020.

Mith imposed defensive measures of isolation and quarantine, we have been able to gauge for ourselves the extent to which we are dependent upon our connections to each other to uphold our physical and mental wellness.



In this final December issue, we will investigate the social ties that bind us, that uphold, that uplift and that sustain us, even down to a molecular level.

Wellness Focus: The Social Imperative~ Connections & Interactions that Cool the Fires of Stress

'Social relationships—both quantity and quality—affect mental health, health behavior, physical health and mortality risk. Adults who are more socially connected are healthier and live longer than their more isolated peers. Such is the imperative of meaningful connection, social isolation of otherwise healthy, well-functioning individuals eventually results in psychological and physical disintegration and even death?' [2[mberson 8; M]outes] According to the World Sealth Organization, the biggest threats to our health, globally, are now chronic degenerative conditions, not infectious diseases. As opposed to various epidemics of diseases that were so common in our history, what is now threatening health across the planet is chronic degenerative inflammatory conditions diseases that we most fear, including Alzheimer's disease, cancer, diabetes, coronary artery disease and autoimmune conditions as well—all systemically driven by stressors from a multiplicity of origins. Together we have engaged in a year-long study of these means of origin, mechanisms of development and methods of prevention and now conclude our focus by factoring in the role that paucity or profoundness in our social relationships plays in these threats.

In a new report recently published by the Department of Sociology at the University of North Carolina, Chapel Hill, researchers drew on data from 4 large national studies of the United States population. They evaluated the role of social integration versus social isolation in terms of impact on things like C-reactive protein (a marker of inflammation), blood pressure, waist circumference and body mass index. The researchers found that those individuals who experienced a higher degree of social interaction, meaning interaction with other people directly, had a dramatically lower risk of detrimental changes in the various measurements. Lack of social connections was associated with a significantly increased risk for inflammation, becoming overweight and even developing high blood pressure.

In fact, this study revealed that the risk of high blood pressure brought on by social isolation was actually higher than the risk of developing high blood pressure by virtue of being a diabetic! Co-author of the study, Y ang Claire Y ang, a professor at the University of North Carolina, commented on the study by stating:

"Our analysis makes it clear that doctors, clinicians and other healthcare workers should redouble their efforts to help the public understand how important strong social bonds are throughout the course of all of our lives." Some of the most striking evidence backing this claim stems from studies of mortality across industrialized nations which show individuals with the lowest level of involvement in social relationships are more likely to die than those with greater involvement. When socioeconomic status, health behaviors and other variables that might influence mortality were all taken into account, the risk of death among men and women with the fewest social ties was <u>more than twice as high</u> as the risk for adults with the most social ties. Social ties also reduce mortality risk among adults with documented medical conditions: among adults with coronary artery disease, the socially isolated had a risk of subsequent cardiac death 2.4 times greater than their more socially connected peers.

There is also consistent and compelling evidence linking low quantity or quality of social ties with a host of conditions, including development and progression of cardiovascular disease, recurrent myocardial infarction, atherosclerosis, autonomic dysregulation, high blood pressure, cancer and delayed cancer recovery and slower wound healing. Poor quality and low quantity of social ties have also been associated with inflammatory biomarkers and impaired immune function, factors associated with adverse health outcomes and mortality.



These studies elucidate yet another important lifestyle choice that can pave the way to lower stress, improve health and resist disease: Social Ties.

We live in a paradoxical era of near-constant communication accompanied by ever-waning in-person social interaction. Although networking and

entertainment through 200m, Skype, Linked In, Lacebook, Snapchat, Instagram and other social media sites are convenient ways to communicate, they do not fall under the umbrella of activities which provide the same benefits as those derived from person-toperson connection. Conversing with full nuances and body language face-to-face, truly listening, exchanging ideas, undergoing spirited debates, sharing laughter and tears, reaching out a hand in compassion cannot happen over the Internet wires. By now we are aware that physical touch can abate loneliness, counteract stress, lower heart rate and blood pressure, boost immune function and improve self-esteem. And that firm handshakes, Hugs, massage, stretching, deep breathing, mind-body interventions and other means that activate our pressure receptors are the vectors by which we stimulate the vagus nerve (connecting the brain to the heart, lungs and gut as well as regulating the nervous system) and directly mediate our parasympathetic responses. But dedicated social bonding and the interpersonal networks we build and maintain are just as relevant and just as imperative in upholding our health, both physically and mentally.

Our social biome can be divided into thirds—1) our time spent alone; 2) our time spent within a spectrum of more superficial associations, i.e., commercial vendors, business colleagues, conversations sparked while waiting in line, passing by; and 3) our time forged in quality relationships with close confidants, family members or long-established friendships. Each individual requires varying amounts of these social biome interactions to accrue benefit, but <u>in every case</u> a scarcity in meaningful investment to our relationships and communities leads to increases in anxiety, depression & other behavioral disorders; eating disorders; alcohol & substance abuse; as well as social & cognitive decline. Social resilience is a key priority for sustained wellness. Thus, taking advantage of opportunities to bond and interact with others, strengthening our personal relationships and volunteering to help others—all face-to-face—should be priorities for our free time.

A Social Imperative—The Ties that Rind

Development of meaningful social ties is an act of building bridges that reaches more expansively than the sum of their parts may expect or warrant. These ties instill a sense of responsibility and concern for others that then lead individuals to engage in behaviors that protect the health of



others, as well as their own health. Social ties provide information and create norms that further influence health habits and mortality: they also promote health through mechanisms of social support, personal control, symbolic meanings, cultural expectation and mental health.

In a more fundamental way, greater social connection may also foster a sense of coherence or meaning and purpose in life, which, in turn, enhances mental health,



physiological processes and physical health. By enhancing psychological well-being, risk of unhealthy behaviors is reduced. Thus, enhanced relationship/health linkages can be viewed as preventative medicine. While social ties may serve to improve health outcomes for those who develop serious health conditions, social ties may also help prevent these conditions from developing in the first place.

Finally, as we have seen portrayed in real-time with preventative measures surrounding the coronavirus, Gealth-related attitudes, behaviors and outcomes as well as happiness are portable; they can "spread" widely through social

networks, the impact of social ties of one person's health transmitted and extending beyond that person to influence the health of broader social networks. As such, social

ties are a potential resource that can be harnessed to promote population health, although the resource can be flipped just as easily to a detriment as they also have the potential to undermine health, with social ties and health varying across social groups.

A growing body of theoretical and empirical work is now coalescing to illustrate how social conditions foster cumulative advantage and disadvantage for health over the life course. This may be a case of the rich getting richer while the poor get poorer in that strained and unsupportive relationships in childhood launch into motion a cascade of factors such as increased risk for depression, low personal control and poor health habits—that lead to poorer

From Significant	From Similar
Others	Others
Emotional Sustenance	Emotional Sustenance
Love, caring, concern	Empathic understanding
Sympathy	Acceptance of
"Being there":	ventilation
companionate	Validation of feelings and
presence	concerns
<u>Active Coping Assistance</u> Instrumental assistance	Active Coping Assistance Threat (re)appraisal Information and advice Coping encouragement
	<u>Social Influence/Social</u> <u>Comparison</u> Role modeling Inspiring hope (possible self)

health and more strained and less supportive relationships across the life course.



Recent and projected demographic trends should also instill a sense of urgency: the confluence of smaller families, high divorce rates, employment-related geographical

mobility and population aging means that adults of all ages, and in particular the elderly, will be at increasing risk of social isolation and shrinking family ties in the future.



Source: United Nations Department of Economic and Social Affairs, Population Division, "World Population Prospects 2019." Data comes from 235 countries and territories.





Changes in Childbearing Among U.S. Women, by Birth Cohort (%)



Source: Emily Agree, calculations from the U.S. Census Integrated Public Use Microdata Series 1970; Survey of Income and Program Participation, various years; and the Current Population Survey, 2012-2016.



"Although we generally experience our bodies as being biologically stable across time and situations, an emerging field of research is demonstrating that external social conditions, especially our subjective perceptions of those conditions, can influence our most basic internal biological processes—namely, the expression of our genes. This research on human social genomics has begun to identify the types of genes that are subject to social-environmental regulation, the neural and molecular mechanisms that mediate the effects of social processes on gene expression, and the genetic polymorphisms ("many forms" or genetic combinations) that moderate individual differences in genomic sensitivity to social context."

"Molecular models resulting from this research are providing new opportunities for understanding how social and genetic factors interact to shape complex behavioral phenotypes (physical traits and characteristics) and susceptibility of disease. This research also sheds new light on the evolution of the human genome and challenges the fundamental belief that our molecular makeup is relatively stable and impermeable to social-environmental influence." [Slavich & Cole]



In fact, a broadening stream of evidence is confirming that we are, indeed, More. We are more than the sum of our parts. We are more than the genetic inheritance from our parents. We are more than a static blueprint for potential encoded by our double-stranded helical DNA.

We are More.

And the More that is responsible for influencing our gene expression, physical attributes, mental processes and resultant behaviors stems from the dynamic social environments we inhabit and the people with whom we share them.

One of the more profound examples of this topic is a quote from a popular medical drama script (Grey's Anatomy),

"The ties that bind us are sometimes impossible to explain. They connect us even after it seems like the ties should be broken. Some bonds defy distance and time and logic: because some ties are simply...meant to be."

Perhaps this resonates so deeply because at a visceral level we recognize the rare truth in the old adage that 'no man is an island,' that we are indeed bound to others beyond blood and through marrow of bone, right down to the imprinting on our very genes themselves.



social, symbolic, or imagined threats occurring in the contemporary social environment can also activate the CTRA, which maladaptively deflects host defenses away from the now more prevalent threat of socially mediated viral infections and toward the now diminished threats of injury and bacterial infection. Because the CTRA can be activated by imagined social threat (i.e., in the absence of actual physical threat), chronic activation of the CTRA can occur, which promotes the development of several inflammation-related conditions, including cardiovascular disease, depression, metabolic syndrome, neurodegenerative disorders, and certain neoplastic diseases. These psychiatric and physical conditions cause substantial morbidity and dominate modern mortality.

[Figure courtesy of Slavich & Cole. The Emerging Field of Human Social Genomics. Theoretical/Methodological Review Article.]

Research is currently ongoing to more thoroughly elucidate how the external social environment gets translated into the internal biological environment of disease pathogenesis and how this, in turn, may lead to new insight, strategies and methods for preventing disorders and promoting wellness. [Slavich & Cole]



Fig. 3. Human social signal transduction. Social signal transduction is the process by which subjectively perceived social conditions and historically and developmentally derived anticipatory worries alter genomewide transcriptional dynamics. (a) Social-environmental threats are neurocognitively appraised and converted into changing patterns of activity in the sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenal (HPA) axis. Neuroeffector molecules from these systems engage specific gene transcriptional programs in differing target cells. In leukocytes, for example, SNS and HPA signaling suppress innate antiviral genes (e.g., IFNA, IFNB), whereas SNS signaling activates, and HPA signaling inhibits, proinflammatory cytokine genes (e.g., ILIB, IL6, IL8, TNF). (b) These processes can also be depicted conceptually, highlighting the fact that social experiences can become biologically embedded in at least two ways. First, internal physiologic recursion can occur, given that the genes targeted by social signal transduction pathways encode the molecules that mediate social signal transduction (e.g., receptors, intracellular signaling molecules, transcription factors, and growth factors). This recursive process propagates experienced-induced transcriptional alterations forward in time by sensitizing signal transduction pathways to the external social environment. Second, external social recursion can occur, given that social signal transduction can modulate genes involved in the regulation of social behavior (e.g., defensive responses to perceived threat). This recursive process takes place when conspecifics in the surrounding environment change their behavior in response to an individual's altered actions, locking the individuals in a reciprocal feedback system. These two pathways give social-environmental experiences the ability to influence the basal cellular transcriptome for weeks and years after the initial environmental impetus has passed. ACTH = adrenocorticotropin hormone; ADRB2 = \(\beta\)2-adrenergic receptor; CRH = corticotrophin releasing hormone; PRR = pattern recognition receptor.

[Figure courtesy of Slavich & Cole. The Emerging Field of Human Social Genomics. Theoretical/Methodological Review Article.]

Altimately, we are social creatures and choosing to live a solitary life is also choosing a disadvantageous and stressful one. For our species, there is no replacement for shared quality human interaction. As has become increasingly evident over the course of this year, wellness is not created in a vacuum and it cannot be achieved alone—we need others to cherish and to cherish us, to provide feedback and guidance, to ease our loneliness and fears, to mitigate our stress responses and even to lengthen the course of our lives



Resources:

Debra Umberson and Jennifer Karas Montez. 'Social Relationships and Health: A Flashpoint for Health Policy.' Journal of Health and Social Behavior. 2010; 51(Suppl): S54-S66. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3150158/

George M. Slavich and Steven W. Cole. 'The Emerging Field of Human Social Genomics.' Clinical Psychological Science. 2013; 1(3): 331-348.

Sormone / Neurotransmitter Interplay:

Dopamine & All Its Friends

A portion of each series this year has been devoted to presenting one piece of the puzzle comprising the structure of our physiological information highways. For example, one interstate, or route of communication, is through the blood by chemical signaling of hormones and cytokines that travel to affect a target organ some distance away from the site of origin. Another interface is through conduction of electrical impulses by the nerves and release of neurotransmitters (chemical messages) transmitted either nerve-to-nerve or nerve-to-cell.

These anatomic routes define the way our bodies communicate, send signals, excite or inhibit responses. The layering of interacting hormones, cytokines and neurotransmitters fine-tune our reactions. Their spheres of influence allow for both lightning-quick reflexes as well as the complexity of nuance-derived endpoints, where multiple cascading pathways integrate to temper the final (positive or negative) effect.

For a brief retrograde thumbnail review, we have introduced the metabolic hormones of leptin, ghrelin and insulin that regulate our hunger, satiety and blood sugar and how dysfunctions in these levels lead to the chromic conditions of diabetes, cardiovascular disease, liver disease and metabolic syndrome, to name a few.

We have interwoven the ubiquitous nature of inflammatory cytokines, their relationship with metabolism, their roles in acute and chronic inflammation as well as development of autoimmune diseases and chronic conditions. Additionally, we presented \mathcal{R} lue \geq one lifestyle models, with their proven efficacy in reversing the deleterious effects intertwined with modern lifestyle choices.

We have shone a light on hormones ultimately derived from the radiant energy of the sun and the subsequent interdependent cascades of vitamin \mathcal{D}_{i} serotonin and melatonin, all contributing to the regulation of our immune systems, emotions/moods, circadian rhythms and sleep cycles, and how disruptions/deficiencies at any level contribute to development of chronic diseases.

We have portrayed the many faces of stress—the good, the bad and the ugly—especially as it pertains to epinephrine



So cortisol; the long-reaching effects on our physical and mental physiology; and the range of effects from its excitatory tendencies on the functional efficacy of our hormones, rhythms, processes, and conditions. Concomitantly, we have displayed the far-reaching power of vagal influences and MBIs in alleviation and counteraction of chronic stress.

In our final issue we will continue to establish our neurotransmitter foundation by highlighting the role of dopamine in the brain and body. There are an estimated 100 billion neurons in the brain, as many connections as there are stars within our known galaxy. Messages are passed along neuronal pathways in the brain via molecules, known as neurotransmitters, that act as "chemical messengers."

The first (sending) neuron releases a neurotransmitter into the timy gap between neurons, known as the synaptic cleft, and the neurotransmitter then crosses this cleft and binds with receptors on the second (receiving) neuron. The neurotransmitter binds by fitting into the receptor like a "key into a lock."



This binding action either causes the second (receiving) neuron to fire or inhibits its firing. An excitatory response passes the message along the neuronal pathway; an inhibitory response dampens this neuronal activity. To end the message, the chemical messenger (neurotransmitter) is "transported" back into the sending neuron and stored for later re-use. Dopamine is classified as a catecholamine (a class of molecules that serve as both neurotransmitters and hormones) and is a precursor of adremalime/epinephrine.



As a neurotransmitter, dopamine travels throughout the nervous system and its dysfunction has been implicated in different nervous system diseases, such as schizophrenia, bipolar depressive disorder, major depressive disorder, addiction and Parkinson's. The level of dopamine transmission increases in response to any type of reward and by a large number of

strongly addictive drugs. Dopamine is commonly associated with providing feelings of pleasure and reward as well as those of vitality and "aliveness."

Dopamine serves as the prime driver or motivational component of the reward pathway. Research shows that even when we are anticipating a reward dopamine levels increase in the brain. As such, dopamine can be considered a chemical that

provides impetus for both Achievement and Addiction.

Let's begin in familiar territory.

<u>Concept #1:</u> "Neurons that fire together, wire together."

This means that every time we experience something new, our brain slightly rewires to accommodate that new experience. When one brain cell sends signals to another, their connection gets stronger. The more signals that are sent, the



stronger the connection becomes. The more we engage in a particular activity the more influential the connections needed to perform those activities become. In simplest terms: the more we do something, the more we keep doing something, more and more efficiently. Good or Bad.

<u>Concept #2:</u> Dopamine Integrates Responses of Multiple Structures

Our brains respond to any pleasurable experience in a uniform deliberate way through the neurotransmitter called dopamine. Jpon secretion it generates a strong sense of want or craving.



Reward Pathway in the Brain Dopamine pathway Prefrontal cortex Nucleus accumbens (NAc): Motivation and goal-directed behavior Ventral tegmental area (VTA): Dopamine production area Dopamine, a signaling agent in the brain that's crucial to memory formation, helps animals remember experiences, both positive and negative. This stamped-in memory gives animals the motivation to repeat pleasurable experiences.

Orienting ourselves in the reward pathway of the brain, dopamine production occurs in the mid brain from the ventral tegmental area (see red dot in figure to the left) and then diffuses outward like fireworks, dispersing to many different structures within the brain via multiple pathways. Oopamine acts as a conductor that generates integrative responses across multiple structures of the brain.

For example, when we remember the "best ice cream " ever had," dopamine ensures that our brains remember not only the tastes but also all the other external sensations surrounding the taste; how we felt internally when we were eating; who was sharing the moment with us; and helps us plan to get it again. Jt does so by coordinating the responses of our amygdala (emotional responses/memory/impulsivity), hippocampus (consolidation of short-term memory into long-term memory), nucleus accumbens (reward circuitry & memory) and prefrontal cortex (focusing attention & planning/coordination).

<u>Concept #3:</u> The Reward Circuit pathway is easily overactivated by modern-day activities, altering brain anatomy \rightarrow Cravings, Impulsivity, Addictive Rehaviors

Everyone is somewhat familiar with the reward circuit pathway, even if only intuitively. When we have achieved a set goal (think of a sports competition/fitness goal, career ventures, hobbies/house DIY projects) or enjoying an object/substance/process that brings us pleasure (shopping, gaming, alcohol/drugs), then our brain cells release more dopamine. In response, our brain compensates by decreasing the production of dopamine & decreasing the number of available receptors for dopamine to bind to.

The next time we encounter the same stimulus, the reward experienced will not be as strong as we have built a tolerance. Thus, we will need to "up our ante" and think bigger as it will take more of the stimulus (and more of the dopamine) in order to produce that same original feeling.

For a real-time example, let's consider sugar. Over the last few decades manufacturers have proceeded from adding cane sugar to processed food products to adding fructose and then to adding fructose corn syrup, high fructose corn syrup, and to even more supplementation with a multiplicity of engineered sugars to increase the perceived sweetness we experience. As a population our palates require more sugars for the same sweet reward & manufacturers have accommodated us, in spades?? There are over 75



different forms or derivatives of sugar (nicely disguised by clever nomenclature) and in any given processed food product there are upwards of 5, 10, 15 or more of these added sugars included that can be identified in the ingredients list.

One important thing to realize about the reward circuit: this pathway is easily overactivated by many everyday modern-day activities. Layered together during the course of any given day, these propel the dopamine-reward cycle into overdrive.



From the moment we open our eyes until late into the night, the dopamine-reward circuit manifests itself through smartphone scrolling; social media/texting/posting, internet surfing; one-click shopping and (Internet gambling/porn; consumption of highly caloric, sugar-filled processed "foods;" binge-watching multi-season shows on (Netflix/other portals; intensive king-making/target-destroying

gaming. Each & every one of these systems is built to keep us mindlessly tuning in, clicking on or eating up...which means multiple trips to our pleasure center and multiple hits from our feel-good neurotransmitter, dopamine.

This cycle of incessant instant gratification and reward/pleasure adversely alters dopamine expression. In turn, regions of the brain responsible for judgement

(prefrontal) and emotion (amygdala) are altered as well, with the dopamine feedback loop triggering the amygdala to fire over and over, bypassing the prefrontal cortex. (This is similar in concept to the amygdala hijack introduced in the November newsletter, just stimulated by a different trigger).

When we continue to habituate the dopamine-amygdala reward circuitry and our predisposed neural pathways are re-routed, this self-perpetuates pleasure-seeking behaviors which



tend to feed on themselves and lead to cravings, impulsivity and eventually addictive behaviors. If we become individuals more driven by our emotional desires and less inhibited in the expression of our impulses, then the bag of potato chips, pint of ice cream and half-dozen donuts are not so difficult to understand; nor is the 6 hours we spent barely moving with our attention utterly consumed by and under the spell of our electronic devices. If we live in a state always at the ready to satisfy our immediate desires and if we expect instant gratification (even at a subconsciously registered level) of those desires, then how far is the leap when we extrapolate into our devolving society at large, defined by incessant reporting of emotional turmoil, outrage, drama, aggression & violence expressed over:

- -perceived but inconsequential slights
- \succ -waiting in line or not being immediately serviced to our exact satisfaction .
- road rage for those cutting into your lane/in front of your vehicle or driving too slowly
- Inconveniences

The Bottom Line

The principle of the reward system is a strong one and it applies not only to substances (such as sugar, alcohol, cocaine, opioids) but also to our behaviors and more specifically our usage of technology (such as binge-watching, gaming, shopping, gambling, sites of porn/violence) or any process that repeatedly over stimulates dopamine-driven pathways. Indisciplined stimulation literally alters the anatomical neural circuitry of our brain as well as its predisposed functions, trending us toward more addictive mannerisms. This has major consequences for both our internal physiology and external behaviors.

We find ourselves once again on the bypass where our urges and desires take precedence, greenlighted by the amygdala, and suppressing the better judgement usually denoted by our prefrontal cortex. We find our motivations, decisions, actions and behaviors based less in rational logical thought and driven more by emotion and the desire to satisfy what we want. Infortunately, these emotion-driven circuits are also responsible for producing depression, anxiety and impulsivity which force the body and brain into a perpetual loop that keeps us craving and coming back for more, restructuring the brain for worse. We have thus far focused on its more well-known role in pleasure-reward, but dopamine also influences multiple brain functions, including concentration, learning, memory, mood, motor control (fine-tuning) and sleep. Low dopamine levels often impact all of these cognitive processes. Outside of the brain, dopamine suppresses norepinephrine release, expands the blood vessels, increases

urine outflow (via stimulation of sodium excretion) and aids in digestion by protecting the intestinal mucosa. The dopaminergic system is also known to play a regulatory role in gastric ulcers under various stressful conditions.

People who are deficient in dopamine lack motivation and drive. They also become



fatigued, apathetic and possibly depressed. They may suffer from mood issues, depressive disorders and develop an addictive personality (alcohol and drugs boost dopamine levels in the short-term). Dopamine deficiencies can also lead to resting tremors, such as Parkinson's disease.



7akeaway 1:

Why addictive pleasure isn't the same as true happiness Dopamine Pleasure Only has five receptors. The neurotransmitter fuels desire and motivation.

- Addictive
- · Short term, like enjoying a piece of cake
- · Visceral-it's felt in the body
- · Inspires taking, like cashing in your chips at the casino
- · Typically experienced alone (eating, shopping drinking, binging)
- · Makes the brain say, "This feels good, I want more."
- Too much leads to addiction



- Not addictive
- Long term, like contentment
- · Etheral-it's felt above the neck
- · Inspires giving, like volunteering at a soup kitchen
- · Generally shared (spending time with friends family, colleagues, a congregation, etc.)
- · Makes the brain say, "This feels good, and it's enough."
- · Too little leads to depression



7akeaway 2:



Resources:

Austin Perlmutter, MD and David Perlmutter, MD. Brain Wash. 2020: pp. 39-53



~Wellness Wizard~ Revelry Overload: Alcohol & Depression in the Season of Celebration & Sadness

Alcohol has been around for thousands of years, evolving along with various peoples and societies. It has been customized in dozens of potable recipes and is commonly available in many different forms and guises. Regardless of presentation, it is known for its many stimulating and mind-altering effects.

Alcohol is ubiquitous, widely accepted in society and consumed by everyone, young and old, men and

women alike. In some cultures, it is even accepted as part of normal social etiquettes. Additionally, it does not carry the same kind of stigma or social abhorrence which other commonly abused drugs carry. By its distinctive pervasiveness, alcohol is distinguished in a class all its own. Sowever, its brain-altering, organ-damaging and cell-toxicity potential should earn the body hazard pay in its efforts to neutralize and eliminate it, and as a society we should recognize and accord it the respect of being the dangerous drug that it is.



Absorption

About 20% can be absorbed from the stomach and the remainder is absorbed from the small intestine. Lood in the stomach:

- Keeps alcohol away from stomach lining, decreasing rate of absorption
- Delays stomach emptying, decreasing rate of absorption from small intestine
- •Stimulates enzymes that can begin to break down alcohol

Metabolism

About 3% passes out of body unchanged via:

- •breath
- •perspiration
- •urine

The remainder goes to LIVER where it is treated like a DRUG—liver enzymes act to detoxify it. If consumed faster than the liver can handle, alcohol builds up in bloodstream and will begin to have effects on the brain.

Alcohol & Serotonin

When alcohol first enters the bloodstream, it also affects the nervous system and brain cells, causing brain functions to increase production of neurotransmitters, such as serotonin and dopamine. This leads to transient feelings of happiness and cements perceived pleasure within the reward circuitry, respectively. Additionally, it is accompanied by release of endorphins, which contribute to our feelings of relaxation and euphoria. Research has shown that serotonin interacts with these and other neurotransmitters to enhance their effects, such as 1) GABA (inhibitory/relaxatory functions), by disrupting cognition S_{r} possibly contributing to alcohol-induced memory loss and impaired judgement; and 2) dopamine (mediate rewarding effects), by reinforcing alcohol-drinking behavior and pivotal role in producing alcohol's rewarding effects;

Alcohol & Dopamine

Dopamine has a role in the incentive motivation associated with acute alcohol intoxication. Consumption of even low doses of alcohol or simply anticipation of availability of alcohol results in production and increased release of dopamine in the nucleus accumbens, contributing to the rewarding effects of alcohol and encouraging a person to repeat the behavior; thus, promoting additional alcohol consumption. Consistent alcohol use overloads the brain with dopamine, while also reducing the brain's dopamine receptors in the process. To enjoy the same numbing and euphoric properties, increased

Neuro-adaptation

Neuro-adaptation, pharmacologically referred to as **dependence**, occurs when regular use causes your brain to adapt physiologically to the effects of a substance.







The brain compensates by limiting its natural production of the surging neurotransmitter(s).

- When the drug usage stops, the brain finds itself with a shortage.
- The shortage causes the experience of observable withdrawal symptoms.

alcohol consumption is required. Alcohol withdrawal produces decreases in dopamine function and diminished receptors that can contribute to withdrawal symptoms, alcohol relapse and feelings of sadness and hopelessness.

These symptoms constitute **withdrawal syndrome** – a temporary condition that lasts only until the brain has readjusted back to a balanced "detoxed" state, or until more of the drug is ingested.

Alcohol & Inflammation

Recent research suggests that alcohol causes inflammation in the intestines and impairs the body's ability to regulate that inflammation by disrupting the balance between "good" and "bad" bacteria in the gut (dysbiosis), which negatively impacts the immune system. Alcohol also promotes the overgrowth of bacteria, further disrupting gut health.

One result is an increased production in chemicals called endotoxins. It is these endotoxins which activate the proteins and immune cells that promote inflammation. Another consequence is observed by the increasing permeability of the gut lining. Typically acting as a barrier, excessive alcohol use weakens the strength of the intestinal barrier, allowing harmful bacteria and endotoxins to leak through, passing from the gut into the bloodstream and spreading throughout the body to impair organ function.

Alcohol also negatively impacts the immune system, slowing the intestine's immune response for attacking bacteria and suppressing a variety of other key molecules and cells that are essential to immune response. This inhibition is accompanied by worsening dysfunction and interaction of key organs, especially the liver and brain. Together, these



effects lead to chronic inflammation, organ damage and disease, which is given physical expression by alcohol-induced gastrointestinal cancers, inflammatory bowel disease, liver disease, brain inflammation and more.



Alcohol & Sleep/Melatonin

Alcohol is a central nervous system depressant that causes brain activity to slow down and has sedative effects that can induce feelings of relaxation and sleepiness. Sowever, consumption of alcohol, especially in excess, has been linked to poor sleep quality and duration (insomnia) as well as exacerbation of symptoms of sleep apnea. Research has shown sleepers who drink large amounts of alcohol before going to bed are often prone to falling into deep sleep quickly but that is partnered with suppression of REM sleep, creating an imbalance between slow-wave sleep (more) and REM sleep (less). Taken together with liver enzymes continuing to metabolize alcohol during the night and decreasing blood alcohol levels, these individuals are also more likely to experience sleep disruptions and decreases in sleep quality.

In addition to this, the chronobiological effects of alcohol are related to melatonin suppression and, in turn, melatonin's relation to inflammation, stress, free radical scavenging, autophagy and cancer risk. Remember that melatonin is an antioxidant that helps combat the damaging effects of free radicals; plus, it has anticancer effects, reduces the damaging effects of obesity on the body by lowering inflammation and helps prevent/slow mental decline in people with dementia. Deficiencies in melatonin are associated with circadian rhythm sleep disorders, reduction in quality sleep, increased levels of cortisol (Sr resultant inflammation) and depressive symptoms. Circadian disruption results from the disorganization of the body's circadian time structure and is an aspect of the pathology of chronic alcohol intoxication.

Studies show alcohol toxicity is modulated by the melatonin circadian rhythm. Acting simultaneously on the neuroendocrine and immune systems, melatonin optimizes homeostasis and provides protection against stress. Melatonin's antioxidant properties may be useful in the prevention of oxidative stress reactions known to be responsible for alcohol-related diseases. Naturally produced melatonin and exogenous sources in food can act in free radical reactions and assist in activation of the endogenous defense system. Therefore, melatonin plays an important role in the normalization of the post-stress state by its influence on neurotransmitter systems and the synchronization of circadian rhythms. In the case of melatonin and alcohol/stress recovery, less definitely does not equate to more.

Effects on the Regin

Alcohol acts as a narcotic, putting the brain to sleep, part by part, as blood levels rise:

Starts with:	Area of the brain controlling "civilized" behavior is asleep; decreases inhibitions, ability to act appropriately	
Moves to:	Areas of the brain controlling speech, vision, motor control (walking) are asleep	
∜f you pass out:	${\mathcal V}$ our whole conscious brain is asleep	
Jf you die:	$\mathcal Y$ our unconscious as well as conscious brain is asleep too.	

Drinking in 'Moderation'



Is moderate drinking good for you? In France, where drinking (especially red wine) is common, the incidence of heart disease is lower than might be expected given the dietary fat intake; *however*, the incidence of alcohol-related diseases, such as cirrhosis and stomach cancer, is *high*.

•One drink = 1.5 oz. "hard" liquor, 12 oz. of beer, 5 oz. of wine or 14 oz. of alcohol

•"Moderation" = no more than 1 drink for women, 2 for men per day

• Note that many wine coolers contain an amount of alcohol equal to that in 1 mixed drink; its presence is disguised with a lot of sugar



A frequent drinker tolerates alcohol better because:

the brain develops a tolerance to alcohol, requiring more to get the same effect

(<u>NOTE</u>: **Jong-term abuse** can lead to Wernicke-Korsakoff syndrome, a type of brain disorder resulting from B1 vitamin (thiamine) deficiency. The syndrome is actually 2 separate conditions that occur because of bleeding from lesions in the lower portions of the brain. This bleeding causes brain damage that presents symptoms involving your vision (nystagmus), coordination and balance (ataxia) and a confused mental state stemming from memory loss and/or inability to form new memories).



the liver will increase its ability to process alcohol on frequent exposure to it.

(<u>NOTE</u>: <u>Jong-term</u> abuse frequently leads to swelling, slow deterioration and eventual dysfunction of the liver through cirrhosis or hardening of the liver. Cirrhosis is a condition in which the liver slowly deteriorates after normal, healthy cells are damaged and scar tissue formation is replaced and the liver is unable to function normally due to irreversible injury).

Additive effects of alcohol calories

Rethinking your drinking: Alcoholic beverages supply calories but few nutrients and may contribute to unwanted weight gain. If you are trying to maximize your dietary goals, then you may want to begin with minimizing your alcohol consumption or modifying strategies (i.e., if you decide on a cocktail, pass on dessert).

According to the National Institute on Alcohol Abuse and Alcoholism:

- •A 12-ounce glass of beer = about 150 calories
- •A 5-ounce glass of red or white wine = about 125 calories
- •A 1.5-ounce shot of gin, rum, vodka, whiskey or tequila = about 100 calories
- A 4-ounce glass of champagne = about 85 calories

CARBOHYDRATE LOADING

Beer, Wine and Spirits (vodka, whiskey, gin, rum) are made by the distillation of fermented substances, such as potatoes, grains (barley, corn, rye or wheat), fruits (grapes, juniper berries, other natural botanicals) and sugars (molasses, honey). As we know, ALL of these ingredients are carbohydrates which our bodies convert directly into our old friend glucose.



For another perspective: Each gram of alcohol carries with it 7 calories. Extrapolating out, a six-pack of beer is the caloric equivalent of 10 slices of bread????

(As the industry standard for a loaf of bread is approximately 18 slices, not counting the 2 end pieces, you do the math!) Common cocktails are even more expensive, calorically speaking:

	Lluid ounces	<u>Calories</u>
 Martini (traditional) 	2.25	124
♦ Martini (extra dry)	2.25	139
♦ Cosmopolitan	2.75	146
♦ Mojito	6	143
 Margarita 	4	168
Pina Colada	9	490
🔶 Daiquiri	2	112
♦ Manhattan	3.5	164
♦ Whiskey sour	3.5	160
♦ Moscow mule	5.1	182

Even "healthier" drinks made with fruit juice are calorically costly: consider sangria: • A 4-ounce serving of typical sangria made with red wine, brandy or orange liqueur and fruit contains about 115 calories.

• Adding fruit juice and sugar results in a drink containing about 260 calories per 8ounce glass.

•Considering ingesting sugar makes you want more of it and alcohol loosens the inhibitions we typically rein in, it's easy to see how this could end up being an expensive night out in more ways than one?! Orinking 4 glasses (at 8 ounces each) would amount to a shocking total of 1040 calories, well over half if not close to the total number of normal calories one would consume in a day?!

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Sleep Tight: Vitality via Nightly Reset & Rejuvenation

"The importance of sleep to healthy aging is often overlooked in the medical community, but it's becoming increasingly apparent that good sleep could be a new vital sign.""

~Robert Butler~

"In 2012 Or. Jeffrey Jliff and his team at Oregon Health & Science Aniversity published a paper describing a fascinating new discovery: the brain has a self-cleaning function." Essentially this is a cleansing mechanism within the central nervous system, likened to a "shampoo" for the brain because it's responsible for removing molecular junk that builds up during our waking hours as part of the brain's normal metabolism. Jurthermore, this prophylactic cleansing was found to be more active at night, sleep providing a physical 'brain washing'. The nightly hours we spend at rest not only facilitates our memory consolidation and refreshes our bodies but also appears to be key to the brain's housekeeping, allowing the overnight cleanup crew to do its job."

[Perlmutter & Perlmutter, p.135]



Sleep's Regenerative Power: Inflammation

"But what happens when the waste is allowed to build up?

Mounting evidence is showing us that this brain trash may be linked to an increased risk of developing dementia. In fact, even one night of sleep deprivation in humans is shown to be associated with an accumulation of one particular kind of brain trash

called beta-amyloid, the brain protein that has been associated with Alzheimer's disease. What's more, evidence now demonstrates a relationship between high levels of beta-amyloid accumulation and depression, especially in those with major depressive disorder who do not respond to treatment. It also turns out that one of the brain areas targeted first by this amyloid buildup is the prefrontal cortex. Waste buildup anywhere—in our homes, in our communities and especially in our brains and bodies does not create a healthy environment. We need adequate sleep to take the garbage out." [Perlmutter & Perlmutter]

Infortunately, as we grow older (and coinciding with decreased melatonin levels and decreased total sleep time) this cleanup process begins to devolve, becoming harder to accomplish, less efficient and less thorough. With our decline in brain wash functioning, we significantly increase our risk of developing Alzheimer's and other forms of dementia as the ability to remove toxic protein deposits is drastically reduced.

"It is difficult to imaging any other state—natural or medically manipulated that affords a more powerful redressing of physical and mental health at every level of analysis." ~Dr. Matthew Walker, 'Why We Sleep'~



Defining Elements of Neurodegenerative Decline

Those who suffer from Alzheimer's disease are characterized by both deposit of an extracellular (outside the cell) protein, beta-amyloid, and by malformation and aggregation of the intracellular (inside the cell), Tau protein. Beta-amyloid deposits become "sticky," conglomerating and leading to the formation of plaques which interrupt communication between neurons. Although amyloid plaque accumulation was once the prevailing theory of neuronal death in dementia, recent research has pinpointed the Tau protein as the key triggering event that kills neurons in Alzheimer's patients.

Typically tau is a stabilizing protein for cellular structures but when the proteins malfunction they begin to accumulate inside the cells as neurofibrillary tangles. These abnormal tangles destabilize cellular structures, causing them to unravel and eventually lead to neuronal death. Neurofibrillary tangles are the common pathological hallmark of a set of neurodegenerative diseases, including Alzheimer's disease, that are collectively referred to as tauopathies (tau protein diseases).



Confronted with pathologic buildup from within (tangles) and without (plaques), brain cells die, which leads to progressive shrinkage and loss of functional tissue and an increase in non-functioning empty spaces (ventricles). These anatomical changes lead to an even more far-reaching and horrific loss of self:

- Cognitive: mental decline, difficulty thinking and understanding, confusion in the evening hours (aka "sundowning"), delusion, disorientation, forgetfulness, making things up, mental confusion, difficulty concentrating, inability to create new memories, inability to do simple math or inability to recognize common things, decline in spatial awareness
- > Mood: anger, apathy, general discontent, loneliness or mood swings
- > Psychological: depression, hallucination, or paranoia



Behavioral: aggression, agitation, difficulty with self-care, irritability, meaningless repetition of own words, personality changes, restlessness, lack of restraint, or wandering and getting lost

Also common:
 inability to combine muscle
 movements, jumbles speech or
 loss of appetite

Alongside deficiencies in adequate brain washing, melatonin secretion is altered in neurodegenerative conditions, including Alzheimer's disease and Parkinson's disease. As we have discussed, production of the hormone also naturally decreases with age, and this decline in melatonin levels has been suggested to be one of the major causes of age-related neurodegeneration.

In the central nervous system, melatonin regulates antioxidant and prooxidant enzymes, prevents damage caused by free radicals, promotes survival of neurons



The Progression of Alzheimer's Disease

under increased oxidative stress, and prevents buildup and toxicity of amyloid plaques. Studies show that melatonin may slow progression of neurodegenerative diseases as well as improve sleep efficiency and cognitive function. Bringing other familiar inflammatory risk factors into play, a longitudinal study following 5.189 individuals over the course of 10 years discovered that people with high blood sugar had a faster rate of cognitive decline than those with normal blood sugar, whether or not their sugar level technically made them diabetic. In other words, the higher the blood sugar, the faster the cognitive decline [Wuxiang Xie. Diabteology. Imperial College, London]. Lurthermore, evidence demonstrates that obesity (and the presence of inflammatory cytokines) doubles a person's risk of having elevated amyloid proteins in their brains later in life. "It's increasingly looking like Alzheimer's is another potential side effect of a sugary, Western-style diet." [Zhazan].

There is also a growing body of evidence that increased cortisol may be deleterious for late-life cognitive performance and may be associated with an increased risk for cognitive decline and dementia, in particular dementia due to Alzheimer's disease. Clinical studies found that elevated cortisol was associated with poorer overall cognitive functioning as well as with poorer episodic memory, executive functioning, language, spatial memory, processing speed and social cognition. Lurthermore, Aigh cortisol has been linked to exerting neurotoxic effects on the hippocampus (leading to atrophy) and promoting oxidative stress and beta-amyloid protein toxicity. In other words, Aigh cortisol levels cause deleterious effects on the brain structures and contribute to neurodegeneration, especially in Alzheimer's disease, via different mechanisms.



Regardless of the combination of mechanisms (disruption of circadian rhythms/lack of quality sleep, elevated blood sugar/metabolic syndrome/obesity, elevated stress-cortisol/prevalent inflammation), each of the stressors we have highlighted in our newsletters is responsible for fostering a neural environment conducive to compounding abnormalities in amyloid and tau proteins. In turn, increased circulating levels of abnormal tau and subsequent hippocampal atrophy have been associated with alterations in the blood-brain barrier and its specialized transport system.

The brain is the most energy-demanding organ of the body and is critically dependent on a daily supply of a quarter of a pound of glucose, its main energy source, to generate the ATP it needs to function. The job of delivering such a large amount of glucose across the blood-brain barrier (BBB) falls exclusively to endothelial (innermost) cells lining cerebral blood vessels. Endothelial cells make up less than 1% of brain cells but are loaded with GLUT1, a specialized transporter protein that helps glucose cross the BBB and enter the brain.

Reductions in the endothelial GLUT1 transporter are found in patients with Alzheimer's disease. Research has further shown that this deficiency leads to reductions in glucose utilization, deficits in neuronal energy metabolism, reductions in "brain washing abilities,"



i.e., perfusion aiding amyloid clearance.

These dysfunctions set the stage for imperiled cognitive functioning and increased risk of neurodegenerative disease.

"Alzheimer's is like a slow-burning fire that you don't see when it starts. It takes time for clumps to form and for cognition to begin to deteriorate. By the times you see the signs, it's way too late to put out the fire."

~Melissa Schilling, professor, NYU~

Comparable to any other chronic disease, our daily choices in wellness—diet, sleep, inflammation, activity, social ties—all build our foundation and contribute to our ongoing neurodegenerative risk.

Sleep's Protective Power: Jmmune

More than a century ago, scientists demonstrated that sleep supports the retention of memories of facts and events. Later studies went on to demonstrate that slow-wave sleep (often referred to as deep sleep) is important by its transformation of fragile, recently formed memories into stable, long-term memories. Most recently, the focus of research in the field has broadened, indicating that sleep benefits memory not only in the neurobehavioral domain but also in the formation of immunological long-term memories.

The immune system "remembers" an encounter with a bacteria or virus by collecting fragments from the bug to create memory T cells, which last for months or years and help the body recognize a previous infection and quickly respond. These memory T cells appear to extract "gist information" about the pathogens.



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The selection of gist information ensures that there are enough \mathcal{T} cells capable of correctly identifying a given pathogen, even with their attempts to elude escape by mutating part of their proteins. It also allows memory \mathcal{T} cells to detect new pathogens that are similar, but not identical, to previously encountered bacteria or viruses. Sleep and the hormonal environment which supports it are both essential components to the completion of this immune recognition function: extraction of gist information, consolidation and effective reorganization of material requires a specific milieu of neurotransmitter and endocrine activity as it is established <u>only</u> during sleep, specifically during slow wave sleep. Subsequent REM sleep may then strengthen these representations or immunological memories at a molecular and synaptic level.

Sleep and wakefulness appear to be associated with different and mutually exclusive modes of memory processing. Illustrated by the figure below, sleep favors processes of memory consolidation that are incompatible with either uptake of information (encoding) or retrieval of information (recall) carried out during the wake phase while simultaneously coping with environmental demands. Curtailing the sleep cycle and interrupting immune memory consolidation by chronic sleep deprivation has been proven to lower our immune responses, making it more likely that we succumb to a pathogen after exposure rather than fighting it off. Without adequate amounts of sleep, we are truly working with only half a deck, handicapping our immune system's abilities to defend us in both the short-term and long-term.



Figure: Model of memory formation in the central nervous system and the immune system [Credit: Westermann et al. 'Trends in Neurosciences.' 2015.]

Sleep's Interactive Power: Social

Data has established that a lack of sleep—both total sleep deprivation and more modest, real-world reductions in sleep quality—leads to a behavioral profile of social withdrawal and loneliness. The underlying neural mechanism of this sleep-deprivation effect involves hypersensitivity in brain regions that warn of human approach (a social repulsion signal), yet impairment in regions that encourage understanding of another's intent (a prosocial signal). In other words, sleep loss blunts activity in brain regions that normally encourage social engagement. The less sleep you get, the less eager you are to socially interact. In turn, other people perceive you as lonelier and less desirable to engage with, further increasing the grave social-isolation impact of sleep loss.



The state of sleep loss should be recognized as a social repellant, enforcing greater inter-personal separation on both sides of the social interaction. Additionally, it has been shown that the asocial impact of sleep deprivation can propagate: people who come in contact with a sleep-deprived individual, even through a brief one-minute interaction feel lonelier themselves as a result, indicating the viral contagiousness of social isolation caused by sleep loss.

Likewise, in a self-propagating deleterious cycle, social isolation induces sleep disturbances/loss, with its concurrent cell stress, wide range of health problems, poor health outcomes and shorter lifespans. It's no wonder that loneliness increases risk of death by 45%!

Social isolation is a growing problem in developed countries. In the Anites States, for example, about half of people older than 85 live alone, and decreased mobility or ability to drive may cut opportunities for other socialization.



This combination of aging, social isolation and sleep deprivation creates a multi-whammy at the cellular and molecular level, ultimately producing populations more defined by poor physical health, including obesity and cardiovascular problems, prone to cognitive decline and dementia and vulnerable to the ravages of psychosocial disorders, such as depression and anxiety.

"We human beings were not designed to be alone. Sleep is a glue that, biologically and psychologically, binds us together as a species. Jronically, sleep is often viewed as something that takes us away from social activity. The opposite now appears to be true: sleep reconnects us with our social circle, with our friends, colleagues, partners and even with strangers. Evidence proves that we sometimes need to refuse a social gathering in order to get the sleep we need."

~Eti Ren Simon~

THE ISOLATED BRAIN

Studies of animals and people experiencing isolation have identified several brain structures that appear to be affected by a lack of social interaction. Although these studies can't identify causal relationships—and don't always agree with one another—they shine a light on some of the mechanisms by which physical isolation, or feelings of loneliness, could impair brain function and cognition.



Resources: Sleep-Reset & Rejuvenation

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THE POWER OF SLEEP

WHY IT'S SO IMPORTANT, AND HOW TO GET MORE OF IT

If your eating and exercise are on point but you still don't feel or look the way you want, poor sleep may be to blame. Here's how to make rest a daily priority.

5 SIGNS YOUR SLEEP HABITS AREN'T WORKING FOR YOU

YOUR MIND IS FOGGY

What we experience and learn gets cemented to memory while we sleep. Interference with this process causes:

- Reduced alertness and concentration
- Confusion
- Impaired judgement
- Forgetfulness

YOU'RE GETTING SICK A LOT

When we don't sleep enough, T-cells go down and inflammation goes up, resulting in:

- Increased vulnerability to viruses and bacteria
- Acute increase in risk of getting sick
- Increased risk of heart disease and
- other inflammation-related illnesses

YOUR WORKOUTS FEEL TOO HARD

Our body uses sleep as an opportunity to refresh neurotransmitter levels and remove energy-draining metabolites. Otherwise, we experience:

- Decreased central nervous system activity
- Slower reaction time
- Low energy and endurance capacity
- Depressed mood
- Reduced desire to exercise

YOU'RE UNHAPPY

While we sleep, we produce fresh neurotransmitters and regulate hormone production. Interference here causes:

- Impaired regulation of emotions
- Heightened stress
- Low mood
- · Possible increase in risk of depression

YOU'RE STRUGGLING WITH YOUR WEIGHT

Poor sleep is linked to excess body fat, as it can:

- Disrupt appetite regulation
- · Cause you to feel hungrier
- Lead to increased calorie intake

Also, excess body fat can reduce sleep quality.

Resources: Calming the Monkey Mind

Donald Altman. 'Clearing Emotional Clutter.' pp.

William J. Cromie. 'Meditation found to increase brain size.' Harvard Gazette. 02/02/2006.

Wellness Challenge:

Quieting the Monkey Mind & Lacing Ancertainty in the Year Ahead



here is your mind right now? Are you fantasizing over the achievements accomplished, destinations visited or wish list scored by your future self? Are you calculating the infinite number of worrying eventualities that might arise or potential if-then escalations that could actualize on some near-distant horizon? Are you deliberating over a

regrettable action or stewing over an emotionally fraught scene which can be referenced within a distant past file? Whether we realize it or not, much of what goes on in our heads entails indiscriminate musings that often contain little in the way of substance. Even more often, we tend to get caught up worrying, obsessing, self-propagating and generally driving ourselves erazy with unproductive "what if" scenarios that are sparked by random thoughts which pop in our head. Although a frequent visitor in the middle of the night, even a prime driver for insomnia, this type of "thinking" occurs all the time. In yoga, this tendency is often referred to as <u>"the monkey</u>

The monkey mind is above all a captivating copilot! We must realize that with it navigating the helm our attention is continually appropriated, diverted and redirected back into its circuitous plotting.



Even more importantly, we must acknowledge the

mind."

differentiation between these thoughts that so often consume us and our actual reality. These two lines of thinking are on parallel tracks: the thoughts of the monkey mind and reality are rarely destined to intersect.

This bears repetition: so much of what we spend our time focused on mentally never actually comes to fruition in our realities. Thoughts are only thoughts and thinking them does not make them true or real. While the worrying and what-ifs are prime drivers in creating abstraction, distraction, unrest and stress in our lives, We, ourselves, are the ones who generate these thoughts. As such, it is We, again, who have the ability to consciously practice methods that allow us to recognize, shield and quiet the monkey mind.

Mind-Body Interventions, such as mindfulness and meditation, are methods which help us embrace change and discourage clinging to such an aimless pattern. When you are mindful, your mind is focused on *right now*. Although it's easy to become trapped in memories from the past or fantasies about the future, these two mind-sets entice you away from being truly present in the moment. The consequence is always thinking, "I should have" or "I can't wait until," rather than "I am right here, right now." Stay aware of this truth: the present moment is the only *real time* you ever have. No amount of guilt can change the past and no amount of worry can change the future, *but you can impact what you are thinking, feeling, doing right now in this moment*. By practicing meditation, we bring our attention out of the past and away from the future and center it steadily in the present. Whether we focus on our breath, on the heartbeat, on different sounds in a room or on other physical sensations, holding the mind disciplined to the present moment can break the mental frenzy. Likewise, by mindfully



acknowledging our train of thought and reasserting our grip on the present moment, on what needs to be done and what is happening right now, then much of the feeling of stress goes away. Feelings become less obstructive and more motivational.

Remember that the more we do something, then the more we do something...our brains are creatures of habit and the pathways we use most often become our unconscious go-to resting places, converging nexus points, and

jumping-off platforms. But our brains are also defined by their characteristics of neuroplasticity, with remarkable abilities of transformation if that is our desire. It only requires deliberative practice and conscious effort on our part. Thinking a certain way is a habit like anything else, so do be realistic and factor in some time to adapt your mental process. Expect the normal trial-and-error evolution while working to become more attentive and skillful at calming the chattering monkey mind. The reward? Increased benefits from more productive, supportive and fulfilling mental thoughts.

Let's face it, with the maelstrom of external uncertainties, discord and ever-expanding magnitude of crises swirling about day after day, confronting and taming the monkey mind has never been more of a challenge. While external factors of such magnitude are mostly beyond our control, focusing on internal self-derived factors that are within our control is a proactive way to ramp up our efforts to release the grip of the past, cease dwelling on the precariousness of the future and mindfully appreciate the significance of our present. Let's take a look at 2 such examples that can help us with centering ourselves and grounding in the present.

Example #1: Consider the practice of <u>Self-Acceptance</u>. We have all had moments when we longed to recapture the ease and carefree years that defined our youth or grieved with nostalgic remembrance over the people and memories that now inhabit a bygone era. We may have entertained detailed fantasies about our "future" deeds, talents, skills, triumphs we felt sure to have attained under certain condition by a certain date, an emotional roller coaster almost always distracting and invariably disappointing in its results. As we have all experienced, comparison is the antithesis of acceptance and can suck away vast amounts of our emotional energy.



hat does it actually mean to have self-acceptance? Reading from *Clearing Emotional Clutter* by Donald Altman: "It doesn't mean accepting weakness, putting up with what we find unacceptable or lowering our personal standards. Acceptance does not mean that we give up and do not try to improve ourselves. It means being honest about our starting points as we gain more skills to change our lives and selves

for the better, according to our individual standards and whatever we may be striving to achieve.

Self-acceptance changes the rules of the game by ending the ego's constant war over what is good and bad in us, what is beautiful and ugly in us, and what is okay to let in and what is not. Acceptance doesn't seek to define us by a particular behavior. With self-acceptance, we invite in our whole self, both unlikable and the lovable parts. We take a more gentle and diplomatic stance toward ourselves, our goals, our limitations, our vulnerabilities and so on. Self-acceptance shines light on where we are too constricted, tight and opinionated. It helps us transcend our problems by asking, 'Where did this knot get tied first?'

Most importantly, it gently guides us to detach from the problem as we accept it by letting it be and letting it go. Self-acceptance grows self-awareness, insight and compassion. It doesn't condemn us because we may have adopted a certain style of thinking from our parents or because we're not as good a singer, dancer, manager, engineer or spouse as someone else. The deeper lesson of self-acceptance is that everything is mixed, even us: when we stand in the light, we also cast a shadow."

"Expanding this thought, trying to only experience or hold on to the positive attributes of praise, fame, gain and pleasure is fruitless. Likewise, attempting to avoid the discomfort that comes from blame, disrepute, loss and pain is a waste of time and energy. Life always serves up a full menu, so we taste both the sweet desserts and bitter dishes. Becoming attached to either outcome_____ wholly positive or negative_____ leads to trouble."

Contemplation of our pasts can be helpful when the purpose is to understand and know ourselves better. Reflection is most helpful when it is done without judgement and with an accepting mindset, focused on the desire to **LEARN** from the past rather than to change it. When we let go of our expectations, our victories and our disappointments we have more room to focus on being at peace with the way things are at each step along the way_____ even as we may be working to change them. By letting go we are able to maximize those moments where we more fully appreciate that right here, right now, we are perfect, that we are whole, that we are complete, just the way that we are.

Example #2: Now consider the concept of Joy. Again referencing Donald Altman, "To steep ourselves in joy does not mean we are trying to escape from the reality of life's difficulties or hassles. Just because life contains challenges or loss doesn't mean we can't also—even simultaneously—shift our awareness and experience joy. This is one of the beautiful ambiguities of life. It is not a simple equation where 1 +1 =2. Joy and suffering coexist, just as light contains not 1 but all colors of the rainbow. To be fully alive, we need to find the joy that is hidden in plain sight, right beside us.



is not a guilty pleasure, something that means we are not being productive. Joy actually counters the mechanistic view of life—that we measure ourselves by how much we produce and do, like a machine. Joy integrates the seemingly disparate parts of our life. With joy, it's the very experience of living that is valued. Joy knits together all

of our life into one seamless fabric. Laughter and other forms of joy are effective at overcoming negative emotions, scrubbing toxic stress hormones from our systems, boosting our immune systems and increasing production of pain-reducing endorphins, which lift our mood; increase optimism, resilience and resourcefulness." "Most of the time, taking in the good takes less than a minute—often, just a few seconds. It's a private act. No one needs to know you're doing it. Every time you take in the good you build a little bit more onto the positive neural structures in your brain. Recognizing the good, appreciating the joy a few times a day for months and even years will gradually change your brain and how you feel and act in far-reaching ways. It's a positive cycle: good feelings today increase the likelihood of good feelings tomorrow."

"Taking in the good is not about putting a happy shiny face on everything, nor is it about turning away from the hard things in life. It's about nourishing well-being, contentment and peace inside that are refuges you can always come from and return to.



racticg feeling the joy by taking a daily **GLAD** snapshot: **GLAD** is the acronym for gratitude, learning, accomplishment, delight. As an exercise for practice, in the coming week, collect those daily moments where you:

- 1) Gratitude: Take a snapshot of something you're thankful for today.
- 2) Learning: Take a snapshot of something you learned about yourself today.
- 3) Accomplishment: Take a snapshot of something you accomplished today, no matter how small, even if only a tiny step forward.
- 4) Delight: Take a snapshot of something that made you laugh, smile or feel joy today."

Reflection on such intangibles lines the path to self-awareness and self-directed proactivity. However, this type of nuanced thought which cultivates interior landscapes is not conducive to either multi-tasking or time-shared activities found within our electronic devices. One of the reasons to literally designate an "appointment" for quiet time, whether during a walk, porch sitting or simply enjoying a favorite beverage, is to invite opportunities for contemplation. Appreciating the rewards of stillness is an art and learning to step away from the flurry of busyness to seek interludes of calm is most definitely a practice. The beneficial physical and mental rewards that rise from the quiet to gelipse and soothe the frenzy, however, are undeniable.

Editor's Note: All is Calm, All is Bright

Back in January we penned our introductory newsletter with its opening statement characterizing general Wellness principles. And today the final December newsletter brings us full circle. During the interim, we have ranged far afield in our illustrations: from intracellular telomeres capping chromosomes that house the genes that direct our brains and bodies to the expanse of space and the power of the sun itself, the radiant energy it casts and the elements of light and dark it provides. From microcellular to cosmic, spanning past, present and future, we have attempted to present the concept that health is neither tallied by the pills in a medicine cabinet, nor gauged by the numbers of doctors we visit; instead, it is ultimately determined by our understanding of the vital links within our bodies, the imperative ties that bind us with others around us and our dependence upon the environment that upholds us through the very air we breathe, food we eat and water we drink. *Everything is connected.*

We have built a foundation supportive of integration: we function from a position of wellness when we respect each aspect of ourselves—physical, mental, social— when we fulfill our need for rest and relaxation; physical release and strengthening; mental challenge and stimulation; self-reflection and social bonding. Although simple in concept, it is remarkably easy to become out of balance, with too much of one thing happening in our life, not enough of something else. In scenarios of either over-commitment or deprivation, we encounter stress to our systems that leads to depreciation in our overall wellness.

To counter stressors evoked from either long periods without balance or by swinging the pendulum too far in one direction or the other in attempts to compensate, we must be mindful of our weekly and monthly priorities and disciplined enough to set boundaries in order to reset our balance when needed. Although it can often seem impossible to find the time to put ourselves first, if we continue in an unbalanced state for long enough, then we usually end up finding that our bodies take us down and out and make us find that time one way or another; making the effort to mitigate our extremes is usually much less painful in the long run. **Moderation in all things.**



We have tried to strip away convention and expose the price we often pay for our progress, wealth and convenience. When it comes to Wellness, the cultures we are investing in today are not producing healthy or happy populations. Most of us live in societies that encourage us to live in ways that are inherently unsustainable and unsatisfying: what passes for a "normal" lifestyle reliably produces stress, disease, anxiety and depression. We must begin at some point to reflect, acknowledge and challenge these conventions in order to improve our health and quality of life.



We must realize, identify and advertise that health is much more than what happens in the doctor's office and that wellness is multi-focal, inclusive of a variety of interconnected determinants that comprise holistic health. We must therefore seek better by working to bring together these aspects in order to focus on supporting the individual as a whole person rather than a collection of specialties or disparate parts.

To that end, collaboration across all biomes will be the key to improving life expectancies of our populations. We need to embed a culture of health across all sectors of society, embracing wellness mindsets at home, at work, in the gym, on vacation, in whatever we are doing and wherever we are. "Sealth starts with where you live, labor, learn, play and pray." [Dr. Howard Koh, Harvard School of Public Health]

Most importantly, we have sought to express that our health, or lack of it, is not always something done to us. Over the years it is We who invest and actively participate in our own outcomes. Too often, we proceed through life on autopilot, our brains overwhelmed by days crammed with a hectic parade of lists, texts, meetings, updates, activities and responsibilities all vying for our multi-divided attention. Too often our brains disengage into daily behaviors driven by habit in order to conserve mental space and energy, rather than forethought or intention.

Too often we begin to drift into a mindless state dictated by all that we have to get done day-after-day, week-after-week, month-after-month and time passes by. Before long we may look up and glance at our personal or professional lives with no clue as to how we got there, perhaps even into ways or places we never intended. Our challenge is to stand back and objectively walk beside ourselves, to confront the daily realities we are creating and to reclaim those choices we rarely realize we are even making.

When we operate by jam-packed schedules, even if they are dominated by many good things, then we too often short ourselves and don't leave time for the really <u>great</u> things. We end up giving leftovers to the people and things that should matter most. Hopefully we recognize ourselves as individuals who should share top billing and be considered a top priority, not for self-aggrandizing reasons, but for our own positive growth as well as all of those around us learning and sharing from our behaviors.

"If we want to live long healthy lives, we need to get proactive, take matters into our own hands, educate ourselves, and weed through common health myths that may be sabotaging our efforts." [MindBodyGreen Editorial, 12/08/2019.] The root of preventable disease is in our hands. Moment to moment our choices—in diet, activity, sleep, social interaction, sunlight exposure—allow each of us to control our own gene expression. Our choices outline, direct and enforce the paths we construct. **Whether we realize it or not**,

\mathcal{W} e do Choose the lives that we lead.

To reclaim our own direction, our own purpose, our own health, our own presence and ability to be present in the lives we are leading, we must first become clear on our priorities. We must define a starting point. We must put down our devices, step away from our distractions and take the time to analyze and determine what habits and behaviors are serving us well and which ones are in need of modification.

The habits we foster, knowingly or unknowingly, can either augment or limit our lives. We fashion our own futures, and ultimately those of our families, communities and societies congruently, through the choices that we make, the lifestyles they create, and the physical health and mental capacity they engender. Wellness matters, both individually and collectively.





High blood pressure, overweight/obesity, high glucoses level in the blood and high cholesterol levels

• Metabolic risk factors

Smoking, unhealthy diet, physical inactivitym, consuption of alcohol

• Behavioral risk factors

Social health determinants and globalization/urbanization/aging of the population

• General momentums

Given all of our exploration, lengthy explanations and personal expansion through the gamut of defining terminology, specific concepts and broad outlines, we end again at our beginning...



ellness starts with the mindset of investing in a healthier you for the long-term. It is carried through on a daily basis, practiced through habits of choice, habits of exploration and habits of the heart.

Wellness is not a spectator sport and it does not arrive with instant gratification.

Wellness requires acknowledgement of multiple opportunities in any given situation...whether we choose to act, to react, to proceed, to let go, to cave in or to carry through, to continue to be held back or to push through our boundaries and be unlimited. Wellness requires commitment to making small positive choices with these opportunities consistently and persistently over time.

Wellness requires the courage to face your current reality, to acknowledge your desire to change for the better and to make intentions to proactively transition towards those goals. Wellness requires patience to accept setbacks or paths that were not initially successful as simply part of the growing process and an attitude that seeks to learn, apply and forge ahead to always try again. Wellness is eminently flexible and can shift to accommodate the ups, downs and unexpected surprises (Good or Bad) that transition through our lives. It is achievable by ANY individual at ANY stage of life, regardless of the starting point and regardless of any prior experience in seeking it.

Wellness is the ultimate gift you can give to yourself and cultivating it walks hand-in-hand in determining a life well-lived with time well spent.

~Choose to Live Well~

70 our all of our Readers...

As we journey through this Season toward meaning, toward hope, toward love and lasting peace, we wish Each and All those things that touch your heart, renew your spirit and bring blessings to your World.

Sappy Solidays! ~Power of 1 Wellness~