GRP

GUT REBALANCING PROTOCOL

Module 5
OPTIMUM SLEEP
Handbook

How to sleep like a (good) baby

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AN AMAZING BREAKTHROUGH

Science has uncovered an ancient practice that will help you to:

- Achieve & maintain a flourishing Gut Microbiome
- Live longer
- Improve recovery and healing
- Enhance your memory
- Be more creative AND productive
- Have a glowing complexion
- Maintain a healthy weight
- Diminish food cravings by up to 100%
- Protect yourself from cancer
- Reduce your risk of dementia
- Improve immune function
- Lower risk of heart attacks, stroke, diabetes
- Fortify libido AND performance
- Prevent and mitigate depression and anxiety.

- You'll <u>even</u>... feel happier

...interested...?

...if they were selling it as some 'miracle product' wouldn't you be scrambling to order it online...?

<u>WELL YOU DON'T HAVE TO</u>!

It's called...
Sleep
In fact...
"If sleep were an eight-hour pill, it would be beneficial to take the full dose at regular times consistently"
... said Harvard Medical School's lead researcher Joon Chung, PhD

WELCOME

"Humans are not sleeping the way nature intended. The number of sleep bouts, the duration of sleep, and when sleep occurs have all been comprehensively distorted by modernity."

- Dr. M. Walker, *Why We Sleep*

Did you know that (regardless of your heritage), until only a few generations ago, our ancestors slept at least 25% more than you do now? Not only that, they used to sleep in two different 'phases', the first from just after sundown-to-dawn, then a 30 to 60 minute nap, sometime in the afternoon. That sleeping pattern evolved over 3.5million years, optimised for our species, our various climates, environments and seasons.

Flash forward to today, and chronically *poor* sleep, not *enough* sleep, not enough *of the right kinds* of sleep, sleep avoidance, and full-blown insomnia have become endemic to people the world over. Today, the average citizen in the developed world would be lucky to get seven hours per night of sleep - many get far less - and of often poor quality. The demands and opportunities of globally digitised, deeply interconnected societies make it increasingly dif-ficult to wind down, relax or switch off altogether.

With so much always happening somewhere, we almost all suffer from FOMO*, to some degree ...and it's overloading our sensory systems and working memory, all to the detriment of our health and wellbeing.

*FOMO = 'Fear Of Missing Out'

There are only TWO good reasons to be between the sheets - and by the time you get through this OPTIMAL SLEEP handbook you'll know all about how to make the very most of ONE of them.

It's important to note that, for economy of reading, this handbook doesn't purport to teach *what* sleep is, relying instead on your experiential understanding. For practical purposes, it focuses on the factors *impacting* sleep and do's-and-don'ts that will help you to ensure that you are maximising and optimising your own sleep.

Suffice to say, in the words of sleep and fatigue specialist Dr. William Dement

"...most of us have the feeling that sleep is a cessation of all activity, an oblivion we slip into where nothing happens. The truth is completely the opposite."

BACK

THE SLEEP CYCLE

During the night, our sleep cycles between rapid-eye movement (REM) sleep and non-REM sleep. During each stage we have a different threshold for how easily we can be woken up.

Non-REM (NREM) sleep is broken into Stages 1, 2 & 3.

Natural periods of wakefulness occur before and intermittently throughout the various sleep stages or as one shifts sleeping position, this is normal.

Stage 1 is the lightest stage of Non-REM sleep. It's often referred to as a drowsy stage where we can easily be disrupted and woken with noise or conversation. The body, and its muscles relax, and brain wave activity begins to slow. It is this stage that you may experience JERKS/SPASMS or a feeling of falling. This is totally normal.

Stage 2 is defined as the first stage of Non-REM sleep. Brain wave activity slows, our heart rate slows, and our body temperature is lowered. We don't easily get woken during this stage. However, we get bursts of sleep spindles which is when the brain inhibits mental processing in order to keep the person in a tranquil state so we can transition to the next stage of deep sleep.

This next stage of deep sleep is Stage 3, known as deep Non-REM sleep. During this stage... it is difficult to wake someone, or be woken, as this is the deepest stage of sleep and is referred to as the restorative stage of sleep. It's often when people will sleep walk, sleep talk or get night terrors.

From here we move into REM sleep, known as rapid eye movement or the dreaming stage. The brain is actually more active than in stages 2 & 3. It is easier to be woken in this stage, but when you are woken up, you will feel sleepy, somewhat groggy.

Rapid eye movement (REM) sleep is a unique physiological activity observed in mammals. Strongly associated with dreaming, REM disturbance affects many psycho-physiological processes including cardiovascular and respiratory systems, brain excitability, neurogenesis (generating new brain cells), synaptic pruning (eliminating redundant brain cells), and the necessary 'housekeeping' function of clearing unwanted, or dysfunctional intracellular debris, wastes, etc.. This autophagic process is essential for maintaining cellular health, neuronal integrity, and homeostasis.

Abnormality in autophagy causes neuronal dysfunction (which can mean death!) leading to neurodegenerative disorders. Because it has also been reported that REM modulates noradrenaline (NA, the brain's stress hormone) levels, inadequate REM sleep is also associated with overall anxiety levels.

And when we suppress REM sleep - as we do when we consume alcohol (in almost any amount) and many, many types of medication - we are also suppressing our brain's dreaming apparatus. Freud famously called dreaming "the safety valve of the mind" and this is the reason it is thought that many forms of habitual subs-tance abuse results in hallucinations - because the dreams the addicted AREN'T having at night begin to invade their daily lives...

We loop through these Non-REM sleep and REM sleep in cycles through the night in 90-110-minute cycles.

But during the first half of the night, the vast majority of these cycles are Non-REM sleep, and very little REM sleep. In the second half of the night, most of our sleep is REM sleep, with little, if any, deep NREM sleep.

MELATONIN AND YOUR MICROBIOME

"The gut produces 400 times more melatonin than the pineal gland"

"Interestingly, at any time of the day or night, the gut contains at least 400 times more melatonin than the pineal gland, once again emphasizing the functional importance of melatonin in the gut."

Melatonin is your 'get to sleep' and 'stay asleep' hormone.

When your gut struggles, your sleep struggles.

When your gut flourishes, your sleep flourishes.

The Enterochromaffin cells, located on the surface of the entire gastrointestinal (GI) tract release Melatonin into circulation from the gastric mucosa.

Gut secreted Melatonin plays several critical roles in the body...

- Regulates Gastrointestinal motility - For example, disturbances in melatonin metabolism and secretion may be involved in different GI diseases including IBS.
- It increases natural killer cell activity immune responses.
- Acts as an immunomodulator.
- Regulates Gastrointestinal secretions.
- Increases the tone of the Lower Oesophageal Sphincter (i.e., the Sphincter that stops heartburn and reflux).
- Releases peptides involved in energy balance.
- Has antidepressant effects.
- Has anti-microbial actions (e.g., Melatonin inhibits E. coli growth).
- Affects the expression of COX-2 (enzyme induced during inflammation).

- Regenerates the epithelial cells of the Gastrointestinal tract (on that note... this is REALLY crucial as Epithelial cells line the gastrointestinal tract and have two major roles... 'segregation' and 'mediation'. Segregation through mucosal barriers, physical barriers and chemical barriers to STOP pathogens entering into the blood stream, which leads to inflammation. And 'Mediation' through the delivery of signals between gut microbes and host immune cells. So, as you can see it is REALLY important that your epithelial are regenerated!
- Plays a role in the activation of lymphocytes and monocytes/macrophages which acts as an immune-surveillant preventing tumour development. Studies suggest that Melatonin may be involved in protection from cancer development.
- Removal of free radicals during sleep, which in turn leads to the inhibition of oxidative stress in the body. Melatonin is the "rest and rejuvenate" hormone

- Has protective antioxidant effects on the lining of the Gastrointestinal tract.
- Has anti-inflammatory actions.
- Modifies the circadian rhythm of gut bacteria to change their production of SCFAs.
- Modulates body weight.
- Regulates mood
- Lowers core body temperature
- Regulates cortisol secretion
- Regulates blood pressure
- Involved in cell proliferation
- Activates immune system
- Regulates Gut microbiome
- Slows down the aging process
- Regulates Hormone synthesis
- Protects the skin from UV radiation
- Reduces skin pigmentation
- Controls dopamine signaling in the forebrain, hypothalamic and hippocampal areas.
- Decreases permeability of the blood-brain barrier... clearance of 'amyloid-beta' and 'hyperphosphorylated tau' proteins (two hallmarks of Alzheimer's disease) occur during sleep.
- AND regulates your sleep-wake cycle and your 'body clock' (circadian rhythm).

In fact, research in the past 5-years has shown that Melatonin has beneficial effects in the treatment of conditions such as...

Circadian rhythm modulation, Sleep-wake disorders, Sleep disturbance Cognitive conditions such as Dementia, Migraines and headache, Tinnitus, Attention-Deficit Hyperactivity Disorder (ADHD), Autism, Eye disorders (e.g., glaucoma), Hypercholesterolemia, Hypertension, Metabolic syndrome, Glycaemic balance, Fertility, Endometriosis, Polycystic Ovarian Syndrome (PCOS), Gastroesophageal Reflux Disease (GERD), Ulcers, Irritable Bowel Syndrome (IBS), Osteopenia, Autoimmune conditions (Multiple sclerosis, Hashimoto's thyroiditis), Coronavirus Disease (COVID-19), Oxidative stress from athletic performance stress, Oxidative stress from excessive environmental toxin load AND Cancer.

MELATONIN and ALZHEIMER'S DISEASE... Let's look closer at the critical function of the neuro-hormone MELATONIN in the prevention of Alzheimer's Disease (AD) and other neuro-degenerative disorders.

The disease is thought to arise from (and also further accelerate) atrophic brain alterations, that result in and contribute further to circadian and sleep disruption, as well as dysfunction in the processes regulating dead cell and other cellular waste removal ('autophagy').

In normal function, melatonin and autophagy play a central role in this sleep time 'cleansing' process. When these become disrupted by insufficient amounts of all types of sleep then critical brain repair and restore functionality is impacted, making our brain tissues increasingly prone to conditions such as DEMENTIA.

So, which comes first...? It seems at this stage a kind of 'chicken and egg' situation...

In the AD brain, the natural antioxidant properties of melatonin is inhibited and plaques and other (eventually toxic) build-ups gradually increase mitochondrial damage and the ability of brain cells to withstand stress and to function normally. GOOD sleep hygiene, then, MUST include that which minimises melatonin disruption and prioritises regular sleeping/waking patterns, as a baseline.

Melatonin secretion increases soon after the onset of darkness and peaks in the middle of the night, between 2 and 4 a.m. with maximum plasma levels occurring around 3 to 4 am. After this is gradually falls.

"Melatonin production and circadian rhythms do not develop in babies until around three months. Breastfed babies have the benefit of melatonin from their mother's milk".... "Levels from infancy to adolescence increase and plateau in association with Tanner stages of puberty and then slowly decline with age starting in the late twenties. Production gradually declines as people age, starting in the late twenties to the fifties"

However, this does NOT mean you are doomed to low Melatonin. Studies reflected that lower Melatonin levels as we age correlated to the reduced exposure to the sun, poorer nutrition, less movement and greater exposure to environmental light at night as we age.

All of these are MODIFIABLE!!

Now... *before you race out to buy a Melatonin supplement* ... research demonstrates that they do NOT come close to providing any real beneficial effect UNLESS they are clinically aligned to an individual's chronotype, and disease condition.

In fact, it showed that Melatonin supplementation fall out with next day hangover and cognitive decline, were far more detrimental to a patient's quality of life than the actual insomnia.

Overall, Melatonin supplements were shown to be ineffective and due to their unregulated production were full of 'fillers' such as flavouring agents, dyes and unwanted solvents and contaminants that were detrimental to health and deemed as actual 'sleep disrupting' agents... resulting in a further downward spiral of sleep.

Also research has shown in sleep studies (Polysomnography) that the use of Melatonin supplements in elderly insomniacs...

"Melatonin was not effective in sustaining sleep. No treatment improved total sleep time, sleep efficiency, or wake after sleep onset"

Interestingly... because the supplement industry is such big business, supplement companies are now trying to harness Phyto-melatonin in plants due to its higher bioavailability and efficacy.

One of the unique features of Phyto-melatonin is that it occurs within the plant matrix concentrate with other adjunctive plant phytonutrients such as...

- Essential Fatty acids.
- Amino acids.
- Vitamins... vitamin K, riboflavin (vitamin B2), choline, vitamin E, thiamine (vitamin B1), pyridoxine (vitamin B6), biotin.
- Minerals... trace amounts of calcium, magnesium, zinc, iron, manganese, selenium, copper, potassium, sodium, phosphorus, chloride, iodine.
- Phytonutrients... beta-carotene, xanthophyll, zeaxanthin, lutein, chlorophyll, violaxanthin.

Research concludes...

"Those additional constituents may completely or partially explain why this phyto-melatonin outperformed synthetic melatonin in cellular assays for inflammation (using COX-2 inhibition) and free radical scavenging"

Thus, WHOLE food is where the benefits of Melatonin lay.

In fact, when compared to supplemental melatonin, food-derived Phyto-melatonin was found to ...

- Have 646% stronger COX-2 inhibition (Cox-2 is involved in pain signalling and inflammation)
- 267–470% more potent free-radical scavenging ability, and...
- 100% greater efficacy in reducing cellular Reactive Oxygen species (rust) in a human skin cell line.

Gut Melatonin is derived through TWO avenues...

- Digestion, and...
- Food intake Phyto-melatonin

Digestion... you have that covered with doing your DIGESTIVE DOMINOES at every meal and snack.

Food intake... Melatonin has been documented in major plant-derived foods and is typically higher in the plant's reproductive organs, especially the seeds, most likely to help ensure the plant's survival and protection against environmental stressors.

Phyto-melatonin can be found in...

Vegetables -- Fruit -- Nuts -- Seeds (incl. seeds such as Anise, celery, coriander, fennel, fenugreek, flax, green cardamom, mustard (black, white), poppy, sunflower; Raw and germinated seeds of alfalfa, broccoli, lentil, mung bean, onion, red cabbage, and radish) --Grains -- Beans and Legumes -- Animal product which contain some Melatonin but relatively less than in plant foods. Also research indicates that animal-based melatonin involves the risk of viral infections.

A vast VARIETY of whole plant based foods can ensure an adequate intake of macro and micronutrients, fibre, prebiotic and probiotics AND phyto-melatonin.

Melatonin production is ALSO dependent on lifestyle factors...

- Exposure to LIGHT throughout the day. Morning or afternoon bright light exposure have been shown in studies to increase nocturnal melatonin levels. Early bright light can also advance the onset of melatonin and LED and other bulbs can suppress melatonin by over 50%.
- Exposure to DARK after sunset.
- Daily movement... which increases both Serotonin and Melatonin production.
- Calming activities such resonant breathing, meditation, bodywork (Yin Yoga), and creative arts... all have been shown to reduce Cortisol levels and inversely increased Melatonin levels.
- Keeping stress levels low... when Cortisol is UP, Melatonin is down.

BACK

THE FALL OUT OF POOR SLEEP

Human beings are the only species that will deliberately deprive ourselves of sleep without necessity or gain - ie., because we just CHOOSE not to go to sleep. Called 'sleep neglect', it is explainable - at least in part - by aforementioned FOMO and access to endless entertainments, coupled with a significant deficit of understanding about how poor sleep impacts our health and wellbeing.

First let's establish what constitutes POOR SLEEP...

- Short sleep duration (less than 6-hrs).
- Difficulty staying sleep – waking up and not going back to sleep for a long time.
- Timing, duration, and frequency of wakeful period(s).
- Reduced sleep efficiency.
- Sleep latency - Taking more than 10-mins to fall asleep.
- Insomnia.
- Sleep Apnoea or sleep-disordered breathing (SDB).

Evidence strongly suggests that Microbiome dysbiosis and intestinal hyperpermeability and subsequent inflammation is behind Sleep Apnoea.

Unfortunately due to this bidirectional relationship worsening the condition, a comprehensive holistic food and lifestyle approach is required to reverse the disease.

"Sleep fragmentation, intermittent hypoxia, and intermittent hypercapnia all play significant roles in altering the microbiome, and initial evidence has shown that alterations of the microbiota affect sleep patterns"

"Manipulation of the microbiota may be a viable treatment for obstructive sleep apnea induced, and possibly other forms of hypertension"

Poor sleep has been linked to, and is associated with...

With an average of 18% reduction in the hormone leptin - Leptin is a cell-signalling hormone vital in the regulation of appetite, food intake and body weight. Studies have shown that a decrease of leptin can lead to uncontrolled feeding and weight gain

Also, in this mere 2 days of sleep deprivation, there was a 28% increase in the hormone ghrelin – coined the 'hunger hormone' because it stimulates appetite, increases food intake (especially of high fat and high sugar foods) and promotes fat storage.

On top of these detrimental effects on the body, there was a 33-45% increase in wanting calorie-dense foods further fuelling weight gain.

Another study done at the Howard Hughes Medical Institute at Stanford University confirmed the that sleep curtailment contributes to obesity by reducing leptin and elevating ghrelin.

Sleep loss and sleep disturbances have also been linked to the development of insulin resistance, Type 2 diabetes and Metabolic syndrome i.e. Abdominal obesity, high blood pressure & high cholesterol.

OBESITY and ABDOMINAL OBESITY has been linked even short periods of disturbances...

"Sleep deprivation seems to be related to the elevation of cortisol, reflecting impairment of HPA axis regulation, and resulting in glucocorticoid overload, which can lead to large deleterious effects on the body. Moreover, there is an association between short sleep duration and higher risk of developing obesity and type II diabetes"

Research shows that JUST a 1-hr reduction in sleep per day is associated with an increase in body mass. And that's cumulative, meaning that on1-hr can consist of... a 15-min wakeful period + 20-min wakeful period + 10-min wakeful period + 25-min wakeful period.

A lack of sleep, or sleep disruption, results in an increase in cortisol which promotes triglyceride accumulation, mainly in visceral adipocytes, thus leading to increased central adiposity.

Worse... If you diet to lose weight while suffering from inadequate sleep, your weight loss is guaranteed to be the shedding of lean body mass, (ie., muscle) not fat.

Poor sleep has ALSO been linked to, and is associated with...

- Increased stress responsivity *(reacting greater to a situation, than it warrants)*
- Inferior cognitive and neurobehavioral performance.
- Increased incidence and recurrence of Cancers.
- Higher incidence of Dementia & Alzheimer's disease.
- Higher incidence of Cardiovascular diseases.
- Increased prevalence of Thyroid dysfunction.
- Increased blood levels of cortisol.
- IBS and IBD.
- Fibromyalgia and Chronic Fatigue syndrome.
- Increased Pain sensitivity.
- Impairment of adaptive immunity; associated with reduced response to vaccines and increased susceptibility to infectious disease.
- Lower levels of natural killer (NK) cell activity, critical to the innate immune system.
- Increased risk of hypertension, coronary occlusion, heart disease, stroke.
- Slowed response times, decision-making ability.
- Decreased sexual desire and stamina.

Research has shown that ...

"Individuals who have a regular healthy sleep schedule have about a 40% lower risk of dying of <u>any cause</u> than their peers who have irregular and insufficient sleep"

AND

"Irregular sleep is associated with pretty broad adverse health outcomes, most prominently cardiometabolic disease, obesity, and cardiovascular disease"

Part of our collective apathy about sleep, our willingness to continue 'borrowing' from sleep to 'fund' other activities in our increasingly busy lives, and the main reason sleep has been so readily sacrificed has been due to the inability of Science to explain, until very recently, why sleep is so important... with much we are still yet to truly understand.

As noted, this assault upon sleep is compromising our physical and mental health, life expectancy, adding stress and reducing situational responsiveness. It touches so many aspects of our moment-to-moment experience, impacting our wellbeing, relationships and productivity so profoundly that no health and wellbeing program (such as the GRP) can be considered 'holistic' or complete without bringing awareness to this very real, chronic and very serious health issue.

Going deeper into recent research, even too much variation in bed time and hours slept can negatively impact both sleep quality, as well as the nutritional and metabolic balance of your body.

CIRCADIAN RHYTHM and ADENOSINE...
There there are still MORE factors that strongly impact the quality and duration of sleep and our sleep rhythm, as well as create real consequences for POOR sleep hygiene...

Perhaps the most important is the signal pulsing throughout your body, night and day, sleeping or waking, from the internal 'clock' that governs your previously mentioned Circadian Rhythm. This clock ensures you are habitually tired or alert at regular times of the day or night.

The other is another neuro-chemical, called Adenosine, that is responsible for building up the feelings of tiredness... a kind of biochemical 'sleep pressure'. Simply put, the longer you are awake, the more adenosine accumulates in your system and the sleepier you feel.

It's this interplay between your Circadian Rhythm and your Adenosine levels that dictates how tired and sleepy or alert and attentive you feel, at certain times of day and night.

And it is, to a large extent, the balance between these two factors that determines how WELL you sleep.

INADEQUATE SLEEP can block and make your coronary arteries brittle, putting you on a path to heart disease, stroke and congestive heart failure.

PERHAPS THE MOST DISTURBING OF ALL .. disrupted and irregular sleep...

"further contributes to all major psychiatric conditions, including depression, anxiety and suicidality," according to sleep specialist Dr. Matthew Walker.

All of the abovementioned conditions and diseases are worsening in countries whose citizens have suffered the worst reductions in hours slept... the US, UK, Japan, South Korea and now China... other Western nations are in this mix as well.

All of these known aspects of sleep hygiene make the conclusion here unavoidable.... if you are not getting the recommended 7 to 9 hours of sleep per night, then you are both shortening your lifespan and stacking on weight in the process.

Circadian disruption through events such as Jet lag and Night shift work have been shown to produce gut dysbiosis and have drastic effects on the level of inflammation within the Gastrointestinal tract, driving intestinal hyperpermeability, lower resistance to enteric pathogens and increase pro-inflammatory pathogens that further disrupt intestinal barrier function and increase intestinal and systemic inflammation.

Better sleep quality and less sleepiness is significantly associated with greater species richness and diversity of the gut microbiota while broken sleep, night-shift sleep disturbances and wakeful periods show a 26% reduction in microbial richness and diversity.

Your circadian rhythm plays an important role in your health and regulation of your Gut Microbiome.

It regulates a number of Gastrointestinal functions, ranging from gastric acid production to small intestinal nutrient absorption to colonic motility e.g. SLOW = constipation and FAST = diarrhoea.

A good night's sleep is CRUCIAL for your health and the health of your Microbiome!

Chronic sleep deprivation causes or contributes to all of the psycho-physiological disturbances and diseases mentioned...

So, it is not just 'nice' but ESSENTIAL that you address your own Sleep Hygiene, for the health of your body, mind - and everyone in your life.

The next section details the essential elements of effective Sleep Hygiene and why they are important.

Following that are precise instructions on how to optimise your own sleep environment, after which these are all knit together to create a sleep prescription, in the form of your own Pre-Sleep Ritual, that with time and practice will become yours...along with blissful rest!

BACK

SLEEP ENVIRONMENT MAKEOVER

Just as your dining table is a dedicated eating space and your office a dedicated work space etc. your bedroom needs to be a dedicated sleep (and romance) space.

Studies show that creating 'dedicated' spaces for specific activities signals the brain to get ready for this space.

Thus... creating a designated eating space that is free from distractions, relaxing and inviting has been shown to initiate the first stage of digestion... salivation i.e. your mouth starts to water.

The same for work environments where the brain steps up into action, and even cortisol levels have been shown to increase, on entering work spaces.

Therefore it is ESSENTIAL that you create a bedroom environment that is conducive for falling asleep and staying asleep.

Creating a relaxing and inviting space for sleep and romance involves looking at both the visual design and practical setup of your bedroom to cultivate the perfect ambience for the best night sleep... EVERY NIGHT!!!

If you haven't done already... it's time to make your bedroom ready for SLEEP and romance!

- It is NOT a working space...
- It is NOT a storage space...
- It is NOT a TV watching space.

On that note... if your partner uses it as ONE of these spaces then it is time to sit down and have a talk about the importance of sleep (and romance) in the bedroom.

What follows is a COMPLETE checklist that you need to undertake to make this your reality.

Do it all in ONE day or spend some time each day to give your bedroom a 'sleep environment makeover'. The time you spend on this will be one of the best investments you will ever make.

You'll know when you have achieved this when you enter your 'inner sanctum'...the sacred space of your bedroom every night and think...

"Ahhh...this is relaxing!"

WHAT YOU NEED TO DO...

- [ ] Remove ALL the clutter in your bedroom (including under the bed) on your side table, even 'stuff' lurking in drawers or cupboards. It should be a minimalist space with a bed, side tables, lamps, crème, current reading book etc.
- [ ] Clean your bedroom to an inch of its life... wipe all your skirting boards, walls, windows, windowsills.
- [ ] How long since your curtains/blinds have been cleaned? Take them off and wash or get them professionally cleaned.
- [ ] Buy new pillows and mark the label with the DATE OF PURCHASE, so you know when to replace i.e. every 1-2 years.
- [ ] Invest in a new mattress or flip current one regularly. A mattress should be replaced every seven to 10 years. Ensure you flip your mattress every 6 months - flip it from top to tail and rotate horizontally, left to right.
- [ ] Purchase organic bamboo/cotton sheets and pillow slips to make sleeping-time luxurious and relaxing.
- [ ] Buy a blanket and/or quilt that is NOT heavy, but not too light in weight. Ensure they are all NATURAL fibres (inside and out) and you LOVE it.
- [ ] Invest in comfy organic cotton/bamboo pyjamas.
- [ ] Change your lightbulbs to blue blocking and/or twilight globes

BACK

TWEAKS FOR SLEEP

Following are some simple SMALL TWEAKS that equate to BIG and positive changes for for OPTIMAL SLEEP...

START YOUR DAY WITH A DOSE OF SUNLIGHT... Start with exposing your eyes to natural light first thing in the morning. Early bright light can advance the onset of melatonin.

Take your Lemon blend/glass of water to the front or back garden, stand barefoot on the ground and face the morning light.

REGULAR DAYLIGHT EXPOSURE... During the day expose your eyes to natural light. At a minimum... 3 x 5-min sessions of light exposure WITHOUT sunglasses. In fact, AVOID wearing sunglasses where possible.

WORK IN NATURAL LIGHT... At work, request to move your desk in front of a window with natural light.

DON'T EXERCISE NEAR BEDTIME... as it stimulates your nervous system and can result in interrupted sleep, therefore stop vigorous exercise at least 4-hrs prior to bedtime. P.S... Yin Yoga, Resistant bands and Barefoot walking are NOT considered rigorous!

HYDRATE REGULARLY... Hydrate regularly throughout the day, rather than guzzling water when you feel thirsty. Stretching the bladder suddenly with a large volume of water, at one time, can lead to frequent night-time urination. Your Stretch-Decompress-Hydrate every 30-mins throughout the day allows for continual hydration, allowing the bladder to void contents regularly.

AVOID ALCOHOL... Although alcohol appears to make you sleepy and may you to sleep straight away, it actually has a very negative effect on the sleep cycle. Reason being is that it REDUCES rapid eye movement (REM) sleep - the deep sleep component.

According to Irshaad Ebrahim, the medical director at The London Sleep Centre in the U.K...

"Alcohol disrupts sleep, particularly in the second half of the night. It suppresses breathing and can precipitate sleep apnoea the pauses in breathing that can cause you to wake during the night."

SET THE RIGHT TEMPERATURE... by making sure your bedding and bedroom are conducive to sleep.

Hot or cold environmental temperatures can reduce the proportion of REM sleep, as well as amount of total sleep, so it's important to get the temperature right.

This doesn't mean to use artificial means like heaters or air-conditioners but rather look at the fabric of your pyjamas, pillow, pillowslips, quilt and sheets. You spend a lot of time in your bed so spoil yourself with natural breathable fabrics, such organic cotton or bamboo. It is SO worth it!!

DON'T SLEEP ON A FULL STOMACH... ensure dinner finishes (including snacks) at least 2-hrs hours before bed.

Research shows...

"that food intake during the nocturnal period is correlated with negative effects on the sleep" and "food intake near the sleeping period (dinner and late-night snack) was negatively associated with sleep quality variables."

If you get home late from work, or after other commitments, then have something light for dinner or eat a smaller amount.

BE AWARE OF THE LINK BETWEEN MEDICATIONS AND SLEEP... Insomnia, and sleep disturbances havebeen linked to medications such as antidepressants. This doesn't mean to stop taking them (we are happy to work with your doctor in reducing dosage, as your health improves).

Medications such as anti-depressants have been shown to produce...

"an alerting pat-tern on EEG activity and a prolongation of sleep latency, increase in awakenings and arousals and a reduction in total sleep time."

HRT medications and pain-relieving medications have also been shown to negatively influence sleep cycles.

It's just important for you to know as it is one of the factors that play a role in the 'sleeplessness' cycle. If you are taking medications, you will need to pay MORE attention and ensure you are effectively implementing all the strategies in this handbook to help counter the effects of these medications on your sleep.

AVOID NAPPING DURING THE DAY... as it can disturb your sleep-wake cycle. If you are REALLY fatigued have ONLY a 10-20min power nap by setting an alarm.

AVOID COFFEE and TEA (incl. green tea) after midday ... as melatonin secretion is controlled by neurotransmitters that can be affected by caffeine. The mean half-life of caffeine in plasma of healthy individuals is about 5 hours. However, caffeine's elimination half-life may range between 1.5 and 9.5 hours which can negatively affect your sleep/wake cycle. Swap to herbal teas AFTER midday to ensure that your melatonin production is not compromised!

STICK TO A SLEEP SCHEDULE... Set a fairly firm 'going to bed' time and a 'wake up' time, the same - day in and day out - even over the weekend. While occasionally going to bed or waking up at a different time isn't a cause for much concern, random bouts of very late nights, or late morning sleep-ins disrupts your circadian rhythm, which feeds back into further sleep pattern disruption and the negative health impacts entailed.

BACK

STAY IN THE DARK

Just as there is widespread concern about vitamin D deficiency being a *"sunlight deficiency"* ... reduced melatonin secretion is seen as a result of *"darkness deficiency"*.

"Two types of cells are responsible for the production of melatonin: pinealocytes and enterochromaffin cells. Pinealocytes are located in the pineal gland within the brain. Enterochromaffin cells are located on the surface of the entire gastrointestinal (GI) tract, with high concentrations in the mucosal lining of the GI tract. Pinealocytes are affected by light and dark; exposure to light suppresses melatonin production and release from the pinealocytes, while darkness (when registered by the retina) increases melatonin production and release into the bloodstream starting with vessels in the brain. From the blood vessels in the brain, melatonin is carried to other body tissues. It is estimated that the enterochromaffin cells within the gut contain upwards of 400 times the amount of melatonin than what is produced by pinealocytes. Levels of gut melatonin can be anywhere from 10 to 100 times greater than melatonin in blood serum levels"

So setting up your ‘home’ to ‘stay in the dark’ or near to darkness as possilbe is an ESSENTIAL part of getting a good night’s sleep.

MANAGE YOUR LIGHT (GLOBES)... Regular, high-wattage household globes expose you to UNNATURAL blue and green light at night which disrupt sleep and circadian rhythms. This is unnatural because blue/green light frequencies are found in nature only at midday and signal your brain that it is time to be awake. Melatonin production declines significantly when exposed to blue-rich (high-frequency) white light, pushing it out till later, creating a 'jet-lag' effect.

Therefore, to ensure your home lighting is not negatively impacting your ability to wind-down at the end of the day towards a good night's sleep, you need to block or change out blue and green lighting.

Start in the rooms you use most at night time) and change out all your cool, blue or green light globes so your eyes and your body are fully protected from circadian-disrupting artificial light at night.

Invest in 100% blue light free bulbs and twilight (red) bedtime bulbs that are zero flicker and low EMF... to simulate a natural (as possible) environment in the home.

Start with changing the bulbs in your reading lamps, in bedrooms and bathrooms, living rooms and areas where you wind down in the evening.

Also ensure that you are not unnecessarily lighting spaces that don't require illumination, as the intensity of background light also tells your brain it is still daytime.

DIGITAL HYGIENE

Understand the KEY role digital devices play in sleep disruption and learn to manage your exposure to them.

DIGITAL (or SOCIAL) JET-LAG'... is a term coined for sleep neglect arising from late night use of digital devices for work or fun.

The fallout to your sleep is through a few routes...

ONE is, as mentioned, blue-light emissions from digital devices, which mimic the wavelength of midday sunlight.

The blue 'light' emitted from electronic devices at night...

"Suppresses the production of Melatonin... a phenomenon called "digital jet-lag", resulting in problematic sleep and waking up tired or not well rested"

Blue light sends signals to the brain that it's still daytime, with the result that melatonin production is pushed back by hours. It doesn't stop, it just makes it happen later. One of the reasons you can wake up fatigued or are fatigued in the morning.

"Artificial light exposure at night - for even brief moments - reduces melatonin production, causes sleep disturbances, affects circadian timing. It changes thyroid hormone, metabolism and energy expenditure. It causes oxidative damage and changes gonadotropic hormones and reproductive fitness"

This strongly impacts your ability to fall asleep AND reduces your ability to stay asleep if you wake up in the middle of the night, because melatonin production and your circadian rhythm are now unnaturally out of sync.

The SECOND reason is the insidious nature of ALGORITHMICALLY generated CONTENT of social media platforms that designed to keep you plugged in and scrolling to get that 'dopamine' hit.

It's not personal, it's just simply the most effective way to keep you engaged and chasing those little rewarding hits of dopamine... this has a MASSIVE IMPACT on the duration and quality of your sleep as it excites the brain rather than calm it.

And THIRDLY... Checking emails or messages at night creates a vicious cycle where you see more work that needs to be done, and your mind starts racing.

"Checking emails or messages at night stops the creative part of your brain from coming to the forefront. Time away from emails etc. gives your brain to chance to problem solve. Which actually leads to better work outcomes!!"

"Checking emails or messages ruins downtime with family, or those you love"

"Data indicates that the spectral profile of light emitted by computer screens impacts on circadian physiology, alertness, and cognitive performance levels"

The BEST solution is also the simplest... learn to manage your access to your devices.

Simply....

Turn mobile phones to DO NOT DISTURB... from 8pm. You can set your 'favourites' to bypass this, so they can still call or message you if necessary.

Plug devices in and AWAY (out of reach)... from 8pm. This DECREASES their convenience of just 'picking up your phone or device'. Meaning you have to REALLY think about getting up to use them. The journey there (to your device) gives you the opportunity to take a different direction.

Schedule in dedicated SCROLLING time... Carve out 30-mins or more, to sit back, relax and scroll BEFORE 8pm. Use it to enjoy the social connections. Put your timer on and then use your digital device. When the alarm goes off, move it OUT OF REACH again. Simple, hey?

SET NIGHT SHIFT MODE ON ALL DEVICES....

If your books are on a digital device, and you read at night, it is easy...

All electronic devices come with functions to set to warmer, ‘red’ light towards dusk, that research suggests masks or reduces (but does not eliminate) the effects of blue light on melatonin production.

As every device, and every model, has different settings (and instructions) to do this... the best way to find out HOW is to 'ask Google', with your device/model number. As mentioned, 'warmer' settings help reduce the 'jet-lag' effect.

It’s important to note however, that while night-time tones emitted by screens are less harsh on the eyes and dimmer light may improve sleep, studies are as yet inconclusive and more definitive research is needed on the topic.

CONSIDER EXPERIMENTING WITH 'BLUE-LIGHT FILTERING' GLASSES OR LIGHTING... if you work in front of a computer screen all day. These glasses can be purchased, at a range of prices, online, at chemists and pharmacies. There is also a special filter coating that can be applied to prescription glasses by your optometrist or optician.

BACK

NIGHTLY SLEEP RITUAL

Nothing ruins sleep quite like a surprise.

While predictability is probably not what you want in an amusement park or on an adventure holiday in an exotic place, nothing calms and relaxes us and prepares us better for sleep more than predictability and routine.

When relaxing or winding-down at bed time, your mind and body want nothing more than the safety of the known and the comfort of the predictable - more than pretty well almost anything else you could imagine.

And this is why, as part of your GRP journey, you are going to test-drive your own 'Nightly Sleep Ritual'... that looks like this...

NIGHTLY SLEEP RITUAL

1. Low light from sundown
2. Digital Hygiene from 8pm.
3. Warm shower/ bath, put on PJs.
4. Diffuse lavender oil.*
5. Drink a cup of relaxing herbal tea.*
6. Moonshine Grounding*
7. Before bed Yin Yoga session.
8. Clear your head before bed.
9. Read a good book*.
10. Gratitude and thanks.

*Optional, but HIGHLY recommended

LOW LIGHT FROM SUNDOWN...

As you've already read... Blue-light emissions from digital devices, which mimic the wavelength of midday sunlight and LED lights in the home (or work) that is, ARTIFICAL LIGHT... can suppress melatonin production by over 50% and thus greatly affects your sleep-wake cycle and quality of sleep.

So FROM SUNDOWN ensure that...

- Your mobile phone, tablets etc. are switched to NIGHT MODE (red mode). In settings, you can set a TOUCH command that turns the screen to RED automatically.
- On computers, in settings, create an automatic 'night mode' setting until dawn.
- Turn down, or off, ALL internal lights and use lamps with low-wattage warm light bulbs.
- Change the bulbs in your bedroom to lower-wattage, warm lighting or better still use candles.
- Pull curtains or shutters to block out artificial external light.

HAVE A WARM SHOWER (OR BATH) IN THE EVENING...

The research is clear... a 10-min lukewarm shower/bath (40–42.5 °C) 1–2 hrs before bed, does the following...

- Signals the brain to wind-down.
- Regulates whole body temperature. In the hours before bed our core body temperature cools, but the temperature of hands and feet increase. Whole body immersion (shower) in lukewarm water stimulates blood flow to the hands and feet, which allows body heat to escape more quickly, providing a better sleep i.e. stops wakeful periods of being too hot or too cold.
- Improves sleep onset latency i.e. quicker to fall asleep.
- Improves total sleep time, sleep efficiency and slow wave sleep.
- Direct skin warming (lukewarm shower) promotes 'non-rapid eye movement' (NREM) phase of sleep. This is the ONE that provides the most rest and contributes to gut microbial diversity and increases SCFA butyrate production.
- Showering at night removes the build-up of sweat, dirt, and body oils ensuring the skin microbiome is kept in peak condition.

To keep in LOW LIGHT... have a candle in your bathroom and shower in warming soothing candlelight.

DIFFUSE LAVENDER OIL... *optional* but HIGHLY recommended. Lavender oil has been proven to decrease restlessness, reduce sleep distirbances, and somatic complaints. It has a beneficial influence on general well-being and quality of life.

Lavender oil bypasses the blood-brain barrier and can deliver therapeutic agents to the brain, exerting positive benefits on the nervous system Research shows that inhaling Lavender oil...

- Significantly decreases cortisol release from the adrenal glands & significantly increases secretion of serotonin from the digestive system, and thus results in a significant reduction of anxiety.
- Calms the Nervous system, which equals better sleep.
- Improves quality of daytime wakefulness and more sustained sleep at night.
- Increases the percentage of deep or slow-wave sleep.
- Acts as a mild sedative.
- Effectively ameliorates generalized anxiety compared to the use of medications such as benzodiazepine (lorazepam) with longer and frequent exposure.
- Repeated exposure results in a more rapid sleep onset with longer duration and more sustained sleep.
- An added bonus... mosquitoes don't like the smell!

DRINK A CUP OF RELAXING HERBAL TEA BEFORE BED...

Optional ... VOI ORGANIC RELAXATION TEA has been crafted using evidence-based research. Using a synergistic blend of organic Lemon balm, Valerian root, Lavender, Chamomile, Passionflower and Skullcap each sip...

- Assists in decreasing nervous tension and anxiety.
- Promotes relaxation and reduces tension.
- Helps to relieve physical and mental tiredness.
- Promotes a deep restorative and restful sleep.

For more a detailed explanation about each of these herbs and their therapeutic properties... click HERE. If you decide to purchase don't forget to use your GRP discount code!

Make your pot of tea PRIOR to your Yin Yoga so that it is at the perfect 'sipping' temperature AFTER your Yin Yoga.

MOONSHINE GROUNDING... can help facilitate a DEEP quality sleep, a time where your body performs AUTOPHAGY... a clearance and recycling of damaged or dysfunctional cells, molecules and various pathogens.

Strengthening autophagy can reduce neuroinflammation and protect brain neurons. It also has anti-inflammatory effects on both the body and mind.

Moonshine grounding facilitates a deep sleep AND grounding the body to earth ("earthing") also reduces night-time levels of cortisol and resynchronizes cortisol hormone secretion in alignment with the natural 24-hour circadian rhythm profile.

How to do...

1. Take your shoes off and find a patch of earth with grass or soil (not concrete, or bricks, or paving etc).
2. Face the moon, or brightest star, or just face the night time sky... CLOSE your eyes.
3. Take 10 deep breathes (resonant breathing).
4. Now you're ready for your Yin Yoga.

YIN YOGA... improves sleep quality through these mechanisms of action...

- Shifts the autonomic nervous system from sympathetic (fight/flight) to activating the parasympathetic activation (rest/digest).Increase in vagal tone.
- Decrease in catecholamine levels in plasma (catecholamine is released during stress)
- Improvement of sleep architecture, that is, an improvement of BOTH REM (Rapid Eye Movement) and NREM (Non-rapid eye movement) sleep cycles.
- Improvement in sleep quality.
- Improvement in autonomic system activity which facilitates sleep-dependent memory consolidation,
- Normalization of day–night cortisol rhythm.
- Facilitation of deep NREM sleep.

This is a MUST DO part of your bedtime routine. If you suffer from pain or stiffness then have your lukewarm shower JUST BEFORE your Yin Yoga session. The warmth of the water eases muscle tension making it easier to relax into poses. And of course, Yin Yoga CAN be done easily in your pyjamas, allowing you to slip easily into bed straight after.

CLEAR YOUR HEAD BEFORE BED... We all experience disagreement or discord during the day, right?

Does this sound familiar to you?...

- You have a disagreement with partner, or other family member.
- They go to bed and sleep like a (good) baby.
- You end up wide awake, angry, churning things in your head, with the urge to force a resolution of the issue.

You may wish to wake them up and force a resolution of the 'issue' however it is best to keep potentially contentious interactions away from bedtime!

So what can you do?

Instead of laying awake and 'ruminating'... sit up in bed, with a low light, grab a notebook & pen and jot down your thoughts and feelings, even if it's dot points.

Jot down what exactly about the 'issue' is/was disturbing for you. Jot down some possible solutions to resolve the issue.

This way you get it out of your head, feel calmer, and switch the light off and fall asleep. And you're ready to have a calm conversation the next day with your notes.

ANOTHER WAY TO CLEAR YOUR HEAD BEFORE BED IS...

BRAIN DUMP... This simple action can turn a restless sleep into a deep slumber. Bedtime worry, about incomplete future tasks, is a SIGNIFICANT contributor to difficulty falling asleep and a source of frequent night-time waking and difficulty getting back to sleep.

We all have to-do lists that never end, and are constantly growing, causing us to worry about unfinished tasks at bedtime.

Sleep researchers at Baylor University found that individuals who wrote a to-do list at bedtime fell asleep faster than those who journaled about tasks they had completed.

They found the KEY was to JUST write down 'to-do' tasks, or unfinished tasks, NOT to journal.

So... buy yourself a small spiral bound notebook and keep it in/on your side table with a pen. Why spiral bound? Because in the morning you can rip out just that page, and you have your 'to do' list ready for the day!

When in bed, sip your warm relaxation tea, and spend JUST 5-mins jotting down the "to-do tasks" that are in your head. Do not ruminate about them, just put them down on paper!! Don't worry about putting them in any order just dump them onto the page.

When you feel like there is no more to write STOP. Move to your next 'ritual' of reading a book. IF, while reading, a "to-do task" comes into your mind, then grab your notebook and jot it down.

READ A BOOK... that is nourishing or inspiring (avoid exciting or disturbing) as part of your wind-down process. Immersing yourself in "a good book" can facilitate the letting go of your day and the transition into wholehearted sleep readiness.

As you find yourself getting sleepy, or dozing off, put your book down, turn off your light, lay down and with your eyes closed let your last thoughts be of...

GRATITUDE AND THANKS...

Why...?

Because it helps calibrate your nervous system and align your expectations, encoding them into your sleeping mind. It's important to remind yourself that you are a worthy, integral part of the universe you inhabit. And one way to do this is to recognise when things are working well for you, on any, and every level.

So take that moment when you close your eyes, to breathe slowly and deeply into your abdomen, recalling what you are grateful and thankful for... which will bring a smile to your face.

You are creating a potent signal to both body and mind to 'unclench', both physically and emotionally... which is the best platform for a good night's sleep.

TROUBLE SLEEPING...?

There are TWO directions from which to approach difficulties in getting to or sustaining restful sleep...

- the first is to look at what you can do *NOW*, when you find you are not sleeping and it's sleep time i.e. REMEDIATION...
- and the other is PREVENTION... the strategies we have discussed in this e-book.

REMEDIATION

If you're having trouble falling asleep, or getting to sleep during a wakeful period at night (after having done your nightly sleep ritual) then try the following...

PROGRESSIVE MUSCLE RELAXATION (PMR)...

1. Lay flat on your back, with your head on your pillow have legs straight and arms by your side. Close your eyes.
2. BREATHE slowly and deeply, in and out, from the belly - 3 times.
3. On the 4th inhale, tense your TOES, then as you exhale, slowly and completely relax your TOES. Observe all the sensations, including how smoothly your muscles tense and relax and how slowly you can stretch out your exhale and relaxing the body part.
4. Once you have finished the toes, progress UP your body i.e. next do your calves, then thighs, then hips and buttocks, then stomach, then chest, then shoulders, then neck, then back, then upper arms, then forearms, then hands, then fingers, then head and finish with your face.
5. Ensure each part is fully relaxed before progressing to the next.
6. In most cases, you will fall asleep prior to completing all body parts.

REMEDIATION

GET UP AND GET IT OUT... Often sleep refuses to come NOT because we are not tired (or exhausted) but because we have too much on our minds i.e. your TO DO tasks. Once you've completed your PMR , if you are STILL awake then it's possibly an indication that you need some more CLEARING OF YOUR HEAD BEFORE BED.

Remember... DO NOT stop to analyse or go any deeper than just making some bullet points of what's keeping you awake...if you catch yourself doing more than this, ie., going into details and problem-solving, then remind yourself that your purpose is to get it out of your head, down on paper and THAT'S IT!

GET UP and READ... if you still can't sleep, then rather than tossing and turning, sit up in bed and read a book with a low light, until you become sleepy.

USE A TARGETED DISTRACTION... Mind STILL racing? Then plug in some earphones and listen to a calming meditation or sleep-promoting nature sounds (eg., waves, rain, etc). **ONLY** use this option if you have implemented everything in this e-book. Also do NOT wake up and start scrolling your device for suitable 'sounds', make sure it is already set ready to play if needed.

IN CONCLUSION...

You now have the perfect ingredients for a GREAT night's sleep...night after night - and the improved health that goes with that.

But ALL these strategies do NOT work unless you implement them!!

Don't think about it. DO IT!!
Don't talk about it. DO IT!!

Let's conclude here with the words of Nottingham University 'sleep diplomat' Dr. Matthew Walker, PhD:

> *"If we wish to avoid the suffocating noose of sleep neglect, the premature death it inflicts , and the sickening health it invites, a radical shift in our personal, cultural, professional and societal appreciation of sleep must occur... it is time for us to reclaim our right to a full night of sleep, without embarrassment or the damaging stigma of laziness. In doing so, we can be reunited with that most powerful elixir of wellness and vitality, dispensed through every conceivable biological pathway. Then we may remember what it feels like to be truly awake during the day, infused with the deepest plenitude of being."*

Sweet dreams!

BACK

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