

Many a good night's sleep has been lost because of an array of subluxation related symptoms.

There is little to no publicity about why many a good night's sleep is essential to good health and, the dangers of inadequate, sound sleep.

Matthew Walker's book: "Why We Sleep" is an exceptional update on the information regarding the great harm due to an absence of adequate sleep and of everyone's necessity for sound sleep.

Let us start with a couple of amazing quotes. Think of your hippocampus as being like a USB stick with limited daily storage and your frontal cortex as a hard drive with lots of permanent storage space.

"Perhaps the more remarkable, as we analyzed the sleep-spindle bursts of activity, we observed a strikingly reliable loop of electrical current pulsating throughout the brain that repeated every 100 to 200 milliseconds. The pulses kept on weaving a path back and forth between the hippocampus, with its short-term, limited storage space and the far larger, long-term storage site of the cortex (analogous to a large-memory hard drive)." Page 110

"The hippocampus offers a short-term reservoir, or temporary information store, for accumulating new memories." Page 109

During sleep, the hippocampus fires electrical signals (sleep spindles) that transfer important stored memories of the day to the frontal cortex and discards unimportant memories, so that the storage area is ready the next day.

"Rather, it was the NREM sleep, and especially the very quickest of the sleep spindles that helped bend apart the curves of remembering and forgetting. The more of those spindles a participant had during a nap, the greater the efficacy with which they strengthened items triggered for remembering and actively eliminating those designated for forgetting."

Sleep spindles do far more than that.

The second amazing find is as follows:

"Nedergaard found that a kind of sewage network called the glymphatic system exist within the brain.

"Glial cells are distributed throughout your entire brain, situated side-by-side with the neurons that generate electrical impulses of your brain. Just as the lymphatic system drains contaminants from your body the glymphatic system collects and removes dangerous metabolic contaminants generated by the hard work performed by neurons in your brain, rather like a support team surrounding an elite athlete."

Associated with the pulsing rhythm of deep in NREMA sleep come is a 10 to 20 fold increase in effluent expulsion from the brain. In what can be described as a night time power cleanse, the purifying work of the lymphatic system is accomplished by cerebral spinal fluid that bathes the brain."

"The glial cells of the brain were shrinking in size by up to 10 percent during NREM sleep, enlarging the space around the neurons and allowing the cerebrospinal fluid to proficiently clean up the metabolic refuse left by the days neural activity."

Now for a few of the book's great quotables.

The opening page, Sleep.

"2/3 of adults throughout all developed nations failed to obtain the recommended eight hours of nightly sleep."

Routinely sleeping less than six or seven hours a night demolishes your immune system, more than doubling your risk of cancer. Insufficient sleep is a key lifestyle factor determining whether or not you will develop Alzheimer's disease.

"The World Health Organisation and the National Sleep Foundation both stipulate an average of eight hours of sleep per night for adults."

"The brain is composed of approximately 100 billion neurons." Page 19

"Owls are thus forced to burn the proverbial candle at both ends. Greater ill health caused by a lack of sleep therefore befalls owls, including higher rates of depression, anxiety, diabetes, cancer, heart attack and stroke." Page 21

"Caffeine is the most widely used (and abused) psycho active stimulant in the world it is the second most traded commodity on the planet after oil." Page 27

"You can think of each individual slow wave of NREM sleep as a courier, able to carry packets of information between different anatomical brain sensors."

"One benefit of these travelling deep sleep brainwaves is a file transfer process." 52

This is a very important part of the book. *"Those that abandoned regular siestas went on to suffer a 37% increased risk of death from heart disease across the six year period." "The effect was especially strong restraint of in workingmen, where the ensuring mortality risk of not napping increased by well over 60%" 71*

"Between 20 and 30% of our sleep time is dedicated to REM sleep dreaming." 72

"Selectively depriving an infant rat of REM sleep leads to aberrant patterns of neural connectivity, or synaptogenesis in the brain." "Moreover rats deprived of capital REM sleep during infancy go on to become socially withdrawn and isolated as adolescence and adults." 82

"But alcohol can inflict the same selective removal of REM sleep." "Alcohol is one of the most powerful suppressors of deep sleep that we know of." 82

"Alcohol consumed by a mother readily crosses the placental barrier, and therefore readily infuses her developing fetus." 82

"However, the infants of heavily-drinking mothers showed a 200 percent reduction in this measure of vibrant electrical activity relative to the infants born of non-alcohol-consuming mothers. Instead the infants of heavy drinking mothers emitted a brainwave pattern that was far more sedentary in this regard." 83

"Alcohol is readily absorbed in a mother's milk." 84

“REM sleep is not optional during early human life, but obligatory.” 85

We know *“only that blocking or reducing capital REM sleep in newborn animals hinders and distort brain development, leading to an adult who is socially abnormal.” 85*

“The lower an older individual’s sleep efficiency score, the higher their mortality risk, the worse their physical health, the more likely they are to suffer from depression, the less energy they report, and the lower the cognitive function, typified by forgetfulness.” 97

“Those who were awake throughout the day became progressively worse at learning, even though their ability to concentrate remained stable (determined by separate attention and response time tests) in contrast, those who napped did markedly better and actually improved in their capacity to memorise facts. “The difference between the two groups at 6 pm was not small a 20% learning advantage for those who slept.” 110

In other words, your brain will continue to improve skill memories in the absence of any further practice. It is really quite magical. Yet, the delayed “off-line“ learning occurs exclusively across a period of sleep, and not across equivalent time periods spent awake, regardless of whether the time or awake or time asleep comes first.”

Comment: oddly, people are defensive when confronted with the following information about micro sleeps, lasting only a few seconds. *“They are usually suffered by individuals who are currently sleep restricted, defined as getting less than seven hours of sleep a night on a routine basis.” 134*

“Based on epidemiological of studies of average sleep time, millions of individuals unwittingly spend the years of the life in a sub-optimal state of psychological and physiological functioning, never maximizing the potential of mind or body due today blind persistence in sleeping too little.” 137

“ Operating on less than five hours of sleep, your risk of a car crash increases threefold.” 138

“ After 16 hours of sleep being awake the brain begins to fail.” “After 10 days of just seven hours of sleep, the brain is dysfunctional as it would be after going without sleep for 24 hours.” 140

“After ten days of just seven hours sleep, the brain is dysfunctional.” 140

“Finally, the human mind cannot accurately sense how sleep-deprived it is when sleep deprived.” 140

“ This coming week, more than 2 million people in the US will fall asleep while driving their motor vehicle. That’s more than 250,000 every day, with more such events during the week than weekends for obvious reasons.” 140

“Vehicle actions caused by drowsy driving exceed those caused by alcohol and drugs combined. Drowsy driving is worse than driving drunk.” 140

Explanation: Drunk drivers may react, sleeping drivers do not react to avoid the harm.

“ The most dangerous time of flight is landing — when the greatest amount of sleeping deprivation has often accrued”. 143

“Studies of adolescence have identified a link between sleep disruption and suicidal thoughts, suicidal suicide attempt, and tragically, suicide completion in the days after.” 148

“Suicide is the second leading cause of death in young adults in developed nations after car accidents.”148

“Relevant from a prevention standpoint, insufficient sleep during childhood significantly predicts early onset of drug and alcohol use in that same child during their later adolescent years, even when controlling for other high-risk traits, such as anxiety, attention déficits, and parental history of drug use.” 149

“A structure located in the left and right side of the brain call the amygdala – a key hotspot for triggering strong emotions such as anger and rage, and link to the fight or flight response – showed well over a 60% amplification in emotional activity reactivity in the participants who are sleep deprived.”

“Even the most fundamental units of the learning process – – the production of proteins that form the building blocks of memories within the synapsis – – are stunted by the state of sleep loss.” 155

“ The very latest work of this area has revealed that sleep deprivation even impact the DNA and learning – related genes in the brain cells of the hippocampus itself.” 155

“ In other words, if you don’t sleep the very first night after learning, you lose the chance to consolidate the those memories, even if you get lots of in “catch up” sleep thereafter.” 157

SLEEP AND ALZHEIMER’S DISEASE

“ The two most feared diseases throughout developed nations are dementia and cancer. Both are related to inadequate sleep.” 157

“One in 10 adults over the age of 65 now suffer from Alzheimer’s disease.” 157

“ More telling perhaps, is affected sleep disturbance precedes the onset of Alzheimer’s disease by several years suggested it may be an early warning sign of the condition, or even contribute to it.” 157

“From this cascade comes a prediction: Getting too little sleep across the adult life span will significantly raise your risk of developing Alzheimer’s disease.” 161

CANCER, HEART ATTACKS, and a SHORTER LIFE.

“Widening the lens of focus, there are more than 20 large-scale epidemiological studies that have tracked millions of people over many decades, all of which reported the same clear relationship the shorter you sleep the shorter your life.” 164

“Progressively shorter sleep was associated with a 45% increased risk of developing and/or dying from coronary heart disease within 7 to 25 years from the start of the study.”165

“If you were one of the individuals who were obtaining just 5 to 6 hours each night or less, you were 200 to 300% more likely to suffer calcification of your coronary articles over the next five years, relative to those individuals sleeping 7 to 8 hours.” 166

"The research groups found a far higher rate of type two diabetes among individuals have reported sleeping less than six hours a night routinely."

"The global health costs of diabetes is 375 billion a year. That of obesity is more than 2 trillion." 169

"Diabetes lops ten years off and individuals life expectancy.171 "

Comment: this is about research about sleep and appetite.

"She recognises that more than a third of individuals in industrialized societies sleep less than 5 to 6 hours a night during the week." 172

"At fault where were the two characters, leptin and ghrelin. Inadequate sleep decreased concentrations of the signaling hormone leptin and increased levels of the hunger instigating hormone ghrelin." 173

"A sleep deprived body will cry famine in the midst of plenty." 173

"Inadequate sleep is the perfect recipe for obesity: greater calorie intake, lower calorie expenditure." 175

" The encouraging news is that getting enough sleep will help you control body weight." 176

"Epidemiological studies have established people who sleepless are the same individuals who are more likely to be overweight or obese." 177

' Three-year-olds sleeping just 10 1/2 hours or less have a 45% increased risk of being obese by age of seven than those who get 12 hours of sleep a night." 177

"These under slept men also have significantly smaller testicles than well – rested counterparts." 179

"Routinely sleeping less than six hours a night result tonight 20% drop in follicular releasing hormone in women." 179

"Natural killer cells are an elite and powerful squadron within the ranks of your immune system.184 "

" A single night of four hours of sleep-such as going to bed at 3 am and waking up at 7 am-swept away 70% of the natural killer cells circulating in the immune system" 184

" A large European study of almost 25,000 individuals demonstrated that sleeping six hours or less was associated with a 40% increase risk of developing cancer, relative to those sleeping seven hours a night or more." 184

"The sleep-deprived mice suffered a 200% increase in the speed and size of the cancer growth, relative to the well-rested group." 185

"He found that sleep deprivation will diminish one form of these macrophages called M1 cells, that otherwise help combat cancer." Page 186

"Poor sleep quality therefore increases the risk of cancer development and if cancer is established, provides a virulent fertilizer for each rapid and more rapid growth." 186

“The World Health Organisation is officially classified night time shift work as in “a probable carcinogen.” 186

END

Part 4

The duration of a sleep problem is defined as occurring more than three times a week for three months. 242

That the “sleep aid” industry, encompassing prescription medications and over-the counter sleep remedies, is worth an astonishing \$30 billion a year in the US. 243

“In the good sleepers, the parts of the brain related to inciting emotions (the amygdala) and those linked to the memory retrospection (the hippocampus) quickly ramp down in their levels of activity as they transition towards sleep, as did basic alertness regions in the brain stem.” 245

“Sleeping pills, are no longer recommended as the first line treatment approach for insomnia by the American Medical Association.” 246

“Weak immune systems are unknown consequence of insufficient sleep.” 262

“Suprachiasmatic nucleus-the master 24 hour clock of the-brain.” 266

“More than a third of our brain is devoted to processing visual information.”

“That individuals using prescription sleep medication are significantly more likely to die and to develop cancer than those who do not.” 266

“Individuals taking sleeping pills were significantly more likely to die across the study period (usually a handful of years) than those who were not.” 266

Those individuals classified as heavy users, defined as taking more than 132 pills per year, were 5.3 times more likely to die over the study period than matched control participants who were not using sleeping pills.” 287

“Even very occasional users - those defined as taking just 18 pills per year-were still 3.6 times more likely to die at some point across the assessment windows the non-users.” 287

The World Health Organisation now labels the lack of societal sleep as a global health epidemic. Taken as a whole, one of every two adults across the developed countries (approximately 800 million people) will not get the necessary sleep they need this coming week.” 296

“There are now more than 15 such studies from different groups around the world showing high rates of mortality in those who is sleeping pills.”

Scanning experiments show: the frontal lobe, which is critical for self-control and running in emotional impulses, is taken off-line by a lack of sleep.” 301

“Employees also win financially when sleep times increase. Those who sleep more earn more money, on average, as economist Matthew Gibson and Jeffrey Shrader discovered when analysing workers and their pay across the United States.” 303

“Sound sleep is clearly sound business.” 304

“The final hours of sleep that we strip from our children and teenagers by way of early school start times – that creates a difference between a stable and unstable mental state.” 310

*“Published in his seminal papers and book *genius of study*, Terman found that no matter what the age, the longer a child slept, the more intellectually gifted they were.” 310*

“By 10 years of age, the twin with the longest sleep pattern was superior in their intellectual and educational abilities, with higher scores on standardised tests of reading and comprehension, and a more extensive vocabulary than the twin who was obtaining less sleep.” 311

“Numerous counties in several US states have shifted the start of schools to a later hour and the students experienced significantly higher grade point average it.” 312

“The National Sleep Foundation affirms this point, with well over 70% of parents believing their child gets enough sleep, when in reality, less than 25% of children aged 11 to 18 actually obtain the necessary amount.”

“When sleep is abundant, minds flourish.” 316

“Accepting that our lack of sleep is the slow form of self-euthanasia” 324

“Sleep appears to be a natural analgesic, and without it, pain is perceived more acutely by the brain, and, most importantly, felt more powerfully by the individual.” 336

Enjoy the book!