

Summer 2019

The air begins to warm, and the sun brings warmth to the earth and the soul, that is how I feel when summer returns to Portland, Oregon. It has been almost five years since my first draft of this book, *Eat Less, Sleep More, and Slow Down*. Not a day goes by without thinking about how lucky and fortunate I have been with all the support and interest by those near and far.

By far, I mean places like India, Germany and the United Kingdom. Naturally, these are sold through digital formats, but the listing on my Amazon and Smashwords monthly sales reports are inspiring. Not to mention the incredible support I have received from the New Seasons Market staff and customers.

Time moves us forward and so does the information on those three simple behaviors in the book—eating less, sleeping more, and slowing down. While not significant in a singular sense, collectively this new information paints a very strong picture on how valuable the three behaviors are for successful aging and health. And, most importantly I believe, is the notion that these simple steps may help one delay the onset of dementia, and I hope and pray prevent dementia.

As I look back over the past five years, I realize that eating less was spot on. However, I wish I had said eat more of this and less of that! Of course, the less of this would be “sugar in the way of refined carbohydrates” and the more would be “protein.” From Paleo to Keto, people have embraced a new style of eating behaviors that I think has real benefit. Naturally, we all have our own inner needs and challenges, but I think the data is solid that lowering our carbohydrate consumption pays dividends in the prevention of diabetes and obesity. And, without letting the cat out of the bag, possibly play a very large role in the delay of dementia.

I think one of the best validations for moderating carbohydrate consumption comes from an article in the Lancet journal. In a multi-community study, investigators looked at all-cause mortality in over 15,000 individuals over a 25-year period. What is most interesting is that both low and high levels of carbohydrate consumption lead to higher mortality. The authors note that the best outcomes seem to fall with a diet of 50% to 55% carbohydrate. (Note: I think one should look more at 45%, but that is my opinion)

Go here for paper, figure 1 says it all:

[https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(18\)30135-X/fulltext#figures](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30135-X/fulltext#figures)

It is intuitive that higher levels lead to mortality, primarily related to diabetes and obesity. But the lower levels provide counter-factual data about the potential impact of protein consumption. I mean what else are you going to eat when you drop your carbs below 40% of daily consumption. The allure of chunks of fat isn't going to generate a new business model. However, one staple that has been around for centuries remains—meat chunks, meat strips, ground meat and more.

So, the data suggests that the higher the protein consumption, the higher mortality rate as one would expect from research conducted over the past 50 years on cardiovascular disease. Interestingly, the investigators were able to separate out those that consumed traditional meat products versus those that practiced a vegan-lifestyle. And, you are already ahead of me I am sure, but plant-based proteins offer a lower mortality risk, but still the potential for risk, nevertheless.

Eating less in general has become widely accepted as a simple model for weight management and successful aging. In my book, I reviewed many of the different programs that have been used under "alternate day" fasting programs. While much of the buzz about the "fasting" style of weight loss has been replaced by Paleo or Keto diet programs, there is still great value in

considering "fasting" within your monthly or annual diet strategy.

In 2015, the group out of the University of Southern California were in the mix of finalizing a clinical study to validate their data collected in mice. Now as I said before, yeast cells or mice aren't people, but in many ways, they allow us to push the envelope on diet strategies in a safe and humane manner. In addition, it allows for a larger sample size for data collection and analysis.

To refresh your memory, the USC or Prolon® diet has an individual perform a "fast-mimicking" diet for 5 days out of every month (one cycle). They suggest that after three to five of these cycles, the body starts to adapt and make changes in an individual's physiological response to eating (my synopsis). The one caveat that I mentioned was that Prolon® was also in the business of selling you their fast-mimicking kit, which basically consisted of a plant-based protein diet.

The group published the results from about 71 subjects in 2017. Basically, after three months or cycles of their program, subjects in the intervention group experienced significant changes. Moreover, the control group upon cross-over to the Prolon® program exhibited similar improvements in health metrics. These included blood

pressure, body mass, fat mass, abdominal trunk fat and blood lipid profiles.

All good stuff, but nothing earth shattering when we look at other programs available or using a sensible caloric reduction program without purchasing "special" foods. Now I am not saying that their program isn't worth considering, because as discussed before, eating can be very emotional and social, which tends to lead to poor dietary choices. So, using a structured program like Prolon®, Weight Watchers (now, WW) or Nutrisystems®, can provide an individual with the structure they need, but cannot adhere to by themselves.

Suffice it to say, the key to all these diet programs is the reduction of total caloric intake, plain and simple. How you do it, when you do it, and for how long you do it; leads to the success of your overall body weight loss and health improvement.

Want to see the Prolon® data, go here:

<https://prolonpro.com/wp-content/uploads/2018/03/Sci-Transl-Med-ProLon-Clinical-Trials-Feb-15-2017.pdf>

When I talk with people about my book and I tell them the title, almost universally they say "Yeah, diet and sleep are my issues." As I probe them a little more, I find that for the most part people are unaware of the problems

related with poor sleep quality. Sure, they all know and experience the sluggishness and sleepiness when they don't get a good night's sleep, but for the most part they are shocked when I talk about how poor sleep can impact their sugar regulation and metabolism.

Thankfully, over the past five years, the importance of sleep has only become quite faddish and trendy. I would like to think because of my book, but truth be told, Ariana Huffington's book, *The Sleep Revolution: Transforming Your Life, One Night at a Time*, and her alliance with mattress companies, has been a driving factor.

I will be honest, I have not read her book, but I suspect it is well written and she covers many of the concepts I presented in my book. But it has brought awareness to the relevance and importance of sleep.

When I poke around the internet looking for current studies on sleep or lack thereof, I don't see anything really that pushes the needle any further than what I presented before, in terms of the science of sleep and physiology. However, there is an over-abundance perhaps, of studies looking at sleep issues or sleep disturbance for any given condition--medical student, college student, new parents, children, young teens, you name it!

This is all well and good, but the key to remember is that poor sleep leads to significant changes in your blood sugar regulation and metabolism. These two primary energy processes have a profound impact on your daily life; and ultimately, I think, we will learn eventually, your longevity.

So, get your sleep, put away your toys, don't watch TV, don't exercise just before bed, don't eat heavy, fatty foods and sleep in a cool, comfortable bed. Pajamas optional!

Here is a good link from the National Institute of Aging for young and old:

<https://www.nia.nih.gov/health/good-nights-sleep>

There continues to be a lack of research conducted on "slowing down," although it seems the world has embraced the topic over the last few years.

The importance and relevance of yoga and meditation were quite strong in my early writings. Not only has there been a few new studies, I can now talk my own experience practicing yoga.

But first, let's talk about what is new.

Okay, there isn't a whole lot new in the way of interventional yoga research. If you look on the web and at those websites that appear to be somewhat academic

and professional, they all report a suggestive trend for yoga to be beneficial. The caveat is that it can vary depending upon individuals.

One study that I think provides some guidance was published in the *International Journal of Behavioral Nutrition and Physical Activity* in April 2019. Lead author, Divya Sivaramakrishnan and colleagues looked at randomly controlled trials published and/or presented in respected scientific databases. The subject inclusionary requirements were quite rigid and focused on quality of health and physical function. Subject age minimum was 60 years of age, representing the average age for retirement in India and China.

The initial screen from the databases produced 7996 records with a final acceptance of 24 records meeting all study inclusionary requirements.

Needless to say, there is a lot more going on with this study, so if you are a numbers person, I highly encourage you to look at the paper itself. You can find it here:

<https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-019-0789-2>.

The authors conclude from their analysis that yoga participants generally experienced improvements in lower limb strength, better balance, lower body flexibility, sleep quality, perceived mental health and vitality. All good stuff.

While you may have a different experience, I suspect that if you undertake a program of daily yoga, you will definitely achieve several of these same benefits.

I know that in my own case, overall body flexibility has improved, which has helped my tennis game. I also see improvement in my balance and general positive outlook.

I only wish I had started my yoga practice sooner, like some 40 years sooner to be exact. However, the one key that comes from most research on yoga or exercise in general, is that no matter when you begin, you will achieve benefits. The human body is quite adaptable, and we now know that many of the response-systems within our physiology are still up for the challenge.

I think the value of the three simple behaviors presented in the book has been demonstrated through my writings. It is clear that one can improve health and longevity by practicing these behaviors. Naturally, the degree of improvement and the length of that longevity will vary depending upon the individual. Yes, we know that environment places a large role in such things, and that the new concept of social determinants of health play an even bigger role.

When considering social determinants of health, there is a move away from the simple to the complex. Instead of looking at whether a child had exposure to poor air

quality, now we look at the impact of poverty-level income, access to healthcare, educational attainment and social engagement--in addition, to the air quality index.

In looking at my own life and lung health, I was impacted by parents who smoked (I know, who didn't in the 60's and 70's), lived in a region that experienced very high smog (do we even call it that anymore) and occasionally imbibed on a few tobacco products.

For most of my adult life, I never really experienced a situation whereby my past, got in the way of exertion requiring significant lung activation. To this day, with a good maintenance program, I can manage my lung health.

Do I benefit because of my educational attainment, or my access to quality healthcare or an income that can allow me to purchase prescriptions?

Yes, to all three. But, at the same time, I make sure that I work hard to exercise my lung muscles, stay away from situations that might cause irritation to my lungs, and work on behaviors that are conducive to good lung health--not smoking is the operational term here!

There is a great book by Dr. Sandro Galea out of Boston University. It is adequately titled, "*Well: What We Need to Talk About When We Talk About Health*," and I

encourage you to pick it up and read it, think about it, and implement it into your daily life.

One last parting reflection for the summer, and perhaps the most important of all, is the strong relationship between these behaviors and brain health, but in particular, dementia and Alzheimer's Disease.

It is a relative new concept to think that one's behavior and choice can possibly prevent or delay the onset of dementia. Traditionally, dementia and the most severe form of that condition, Alzheimer's Disease, were considered a natural stage of aging.

We all know and experience the impact of aging, whether in muscle mass, bone health, reaction time or even, remembering where we put those darn keys. Or, one might say now, "kids, have you seen my phone?"

Would you be surprised to learn, the most people, some 80% to 90% live late into life without any signs of dementia. You see, dementia and Alzheimer's Disease are not a normal course of aging.

So, if it isn't a normal course of aging, might one suggest that it can be prevented?

Well, no, at least for now, and there are several reasons why.

First, dementia and the behaviors therein, are spread across a wide spectrum. There are mild cognitive impairments that can come into play, as well as, vascular dementia, related to poor circulatory health, causing blood flow problems within the brain.

And, second, dementia and AD at the present time are only confirmed through a post-mortem examination of the brain and brain structures. There is new data showing that almost 25% of people with demonstrable, clinical dementia, have no apparent physiological and neuro-anatomical change associated with dementia. Moreover, in these individuals, there is almost a 14% incidence of vascular dementia, probably related to some neuro-vascular event that went un-reported or un-diagnosed over that person's lifetime.

Interestingly, we might believe that individuals who die without those typical signs of dementia, would present brain structure and physiology absent of any dementia characterization (beta amyloid, tau tangles). But, in fact, it is suggested in a few studies that up to 20% of these people have such findings. Likewise, about 20 to 25% of those exhibiting traditional signs of dementia, do not have noticeable changes in brain morphology as would be expected.

We are still in the early stages of fully understanding the impact of neurodegenerative processes on the brain, the

conscious mind and dementia. Hopefully, with more time and dollars we may ultimately find an answer.

Speaking of dollars, the National Football League has committed some \$100 million dollars to fund research on brain concussion or chronic traumatic encephalopathy, or CTE.

Read more here:

<https://www.ninds.nih.gov/News-Events/Directors-Messages/All-Directors-Messages/Teaming-Tackle-Concussion>

While not directly related to dementia, I can only imagine that investigation into the inner workings of brain concussion or injury from sport will dramatically increase the knowledge of basic brain morphology and the relationship with behavior and thought.

It seems that eventually there will be a meeting of the minds when this research on CTE comes into proximity to those researching the dementia spectrum. Stay tuned, only good things can happen.

When one looks at the published research and the media news on dementia and Alzheimer's, we find a wide variety of topics and stories. Sadly, the one story that we hear the most is of another failed clinical drug trial for the treatment of Alzheimer's disease; and even a few bold enough to tackle the concept of prevention of dementia.

It has been estimated that the United States has spent close to \$250 million per year over the past decade funding research on dementia and Alzheimer's disease. Given the track record of the failed drug trials, one might think that this was money wasted, but we tend to forget that much can be learned from what doesn't work, as well as, what does work.

The blood-brain barrier is often the main cause for these failed experiments. This barrier is important for keeping the fluids, cells and supporting tissues of the brain healthy and free from pathogen- and chemical-exposure.

But, conversely, it serves as an impediment when trying to push something into the brain that might be helpful, not harmful.

The body uses this principle in a variety of other ways, perhaps best known from the immune system. What might be termed, the self or non-self system!

The white blood cells swirl around our circulatory system looking and waiting for anything out of the normal, the non-self. When these cells sense or feel that an object is non-self, they go into attack mode.

This attack mode destroys those pathogens, parasites and cells (e.g. cancer) with the intent to bring the system back to homeostasis, or balance.

For the blood-brain barrier, the cost or toll to get across the membrane and into brain itself is very high. If the barrier for entry wasn't so high, we would see a lot more issues and problems with the brain that we current observe. However, it has served as one of the main reasons why success for the treatment of Alzheimer's disease has been so fleeting.

But what if I told you there was a potential solution using a "self" recognition chemical? One that is under your own direct control and regulation!

Interested?

\$250 Million Interested.....

Okay, being in a good mood, I will share it with you for the price of my book.

The chemical would be.....

Drum roll here.....

Insulin.

What?

Wait a minute. Isn't that part of diabetes or something.

Yes, you are correct. So, read on.

To refresh your high school biology class on diabetes, insulin is released form the beta-cells of the pancreas.

When it hits the blood stream, it is like a heat-seeking missile.

The purpose of insulin is to help guide glucose (sugar) into its appropriate tissue. Now there are a few places where glucose can go, but we really want it to go into muscle, the liver and a little bit into the brain.

Without getting too technical, insulin activates a protein-receptor on the membrane of the muscle tissue and says, "Open Sesame."

This opens a channel in the membrane that allows the sugar to cross into the muscle cell fluid (you might remember it being called cytoplasm), where it hopefully we be used for muscle contraction and if not, then stored within the muscle or liver.

Now, some of the circulating glucose will cross into the liver where it will be stored for later use. But the main point here is that insulin helps guide the sugar.

And, while yes insulin is a chemical, it falls under the term "hormone."

Ten bonus points on the final, but anyone remember what the hormone "glucagon" does?

Anyone, anyone. Ferris.....

Okay, I see this is all a bit fuzzy, so here it goes.

Glucagon does the opposite of insulin.

Yep, it is released from the alpha cells of the pancreas, and when it swirls around in the blood fluids, its main function is to help "glucose" escape the cell, primarily the liver.

As a reminder, the storage form of glucose is glycogen, which is like starch we find in the vegetable kingdom. Glycogen and starch are complex bundles of glucose molecules that contain considerable energy for short-term use.

Quite frankly, you don't normally ever hear of a problem with glucagon release, but it is possible with a dysfunctioning pancreas.

The more common challenge is when one is unable to produce insulin, then a person cannot move glucose across into the liver, muscle or the brain, and blood glucose levels rise. Bad!

High glucose is very toxic.

When a person is unable to produce insulin, it is termed Type 1 diabetes. And, they must monitor their blood sugar level and always have an "insulin" shot available to help manage glucose levels.

Type 2 diabetes is different in several ways and occurs primarily later in life. In this condition, the person can

produce insulin just fine. The pancreas secretes insulin as intended, it might be in lower levels, but it can be produced.

The challenge for a type 2 diabetic is that the receptor on the intended membrane (muscle, liver, brain) is desensitized or non-responsive to the insulin that is passing by, resulting in that elevated blood glucose.

No matter how much insulin you throw at the membrane receptors, they are just not going to respond.

Of course, there is a lot more going on, but hopefully you get the picture.

There is good research to show that type 2 diabetics can achieve improved regulation through diet and exercise. In fact, exercise alone is a good signal for the body to produce more of those cell membrane receptors that help sugar cross into the muscle.

In the past decade, it has become known that insulin crosses the blood-brain barrier and exerts influence on several pathways, the two most prominent being food intake and body weight. And, in fact, there is compelling evidence that suggests that insulin-resistance can develop in the brain, as one might find with type 2 diabetes. This resistance reflects a down-regulation of responsiveness to insulin that crosses the blood-brain barrier, resulting in a

variety of conditions related to metabolism, energy regulation and body weight.

A recent study suggested the use of an insulin-nasal spray as a treatment for obesity. The authors present solid evidence showing that the insulin levels within the brain are increased dramatically through nasal delivery. Moreover, they show that insulin-sensitivity within the brain is different between normal and obese individuals.

If you want to read more about this study, go here:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6471380/pdf/ijms-20-01317.pdf>

The relevance of this research and others regarding insulin-resistance within the brain and hypothalamic regions can be found with long-standing causative data regarding type 2 diabetes and the incidence for dementia and Alzheimer's disease.

It has been known since the late 1990's that high blood glucose and systemic insulin dysregulation were casually linked with dementia and Alzheimer's disease.

A good review of this topic can be found here:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3045545/>

It must be mentioned that causation does not mean confirmation. And, there is still much to be learned about the impact of insulin on brain morphology and dementia. However, a recent study out of Japan provides some very compelling evidence showing the strong link between diabetic pathologies in the brain and amyloid plaque build-up, normally one of the post-mortem signs of dementia.

The study by Wakabayashi and colleagues was extremely thorough and rigid in design and analysis. While not clinical in nature, the study was designed to investigate many biological and physiological mechanisms associated with type 2 diabetes and Alzheimer's disease.

Go here for this paper:

<https://molecularneurodegeneration.biomedcentral.com/articles/10.1186/s13024-019-0315-7>

I find their data showing that insulin-resistance and amyloid build-up can be developed through consumption of a high fat diet of interest, but even more interesting, is the fact that this damaging condition can be totally reversed through simple dietary moderation and caloric restriction.

This speaks well for one's ability to change the outcome in the future.

While there is much more to consider and clinical trials will need to be conducted, I believe that it is conceivable that the best offense and defense in our fight against Alzheimer's disease is through insulin-signaling across the blood-brain barrier.

And, if this is the case, then managing your blood sugar through exercise, diet and sleep will go a long way towards prevention.

Dementia and Alzheimer's disease have always been considered chronic, long term conditions developed over decades. So, what better way to fight the battle, than to pursue a health behavior of eating less, sleeping more and slowing down over your remaining life span. No matter how many years that may be!

What about those suffering with dementia and Alzheimer's disease now?

If the dementia spectrum and observed behaviors are a result of amyloid plaque and tau-protein bundle disarrangement, then it seems reasonable that the connectedness of the neuronal signal will be impaired, perhaps irreversibly.

However, one thing we do know about the human body and the human spirit, is that it can adapt and make adjustments under the most extreme conditions.

There is still much to be learned about this concept.

But, what a great story, if the most successful drug in history for combating dementia, turns out to be something that we manufacture ourselves.

There is a lot to consider in this update, but I believe that the story continues to build about the importance of the three simple behaviors outlined in my book:

eat less, sleep more, and slow down!

Best of luck, and thanks again for believing in the story.

Robert Hesslink, Jr., Sc.D.

Haven't bought my book,

Eat Less, Sleep More, and Slow Down

you can find it at most digital resources for \$1.99.